Heating Piping & Air Conditioning

JANUARY
1959

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. . . for Consulting Engineers • Mechanical (Heating, Piping, and Air Conditioning) Contractors • Engineers with Plants and Big Buildings

directory

and show number

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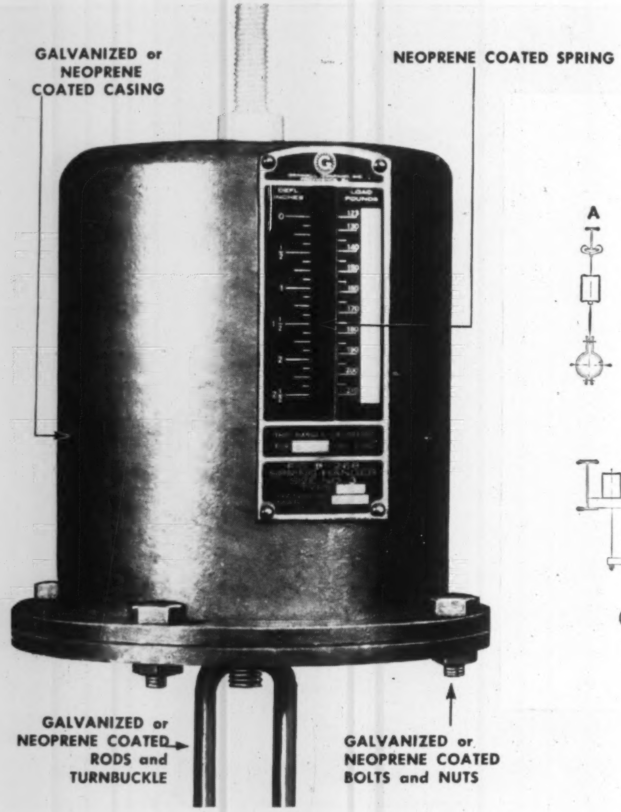
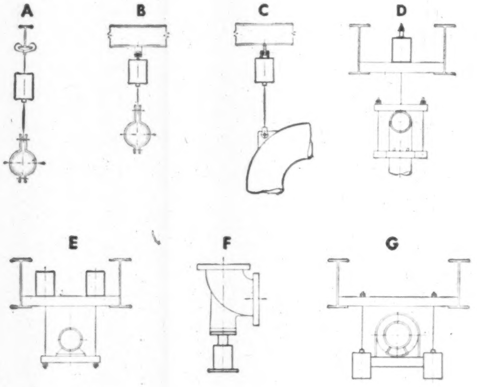
corrosion-resistant, weather-resistant

GRINNELL VARIABLE SPRING HANGERS


GALVANIZED or NEOPRENE COATED CASING
NEOPRENE COATED SPRING
GALVANIZED or NEOPRENE COATED RODS and TURNBUCKLE
GALVANIZED or NEOPRENE COATED BOLTS and NUTS

AVAILABLE IN 7 TYPES FOR THESE TYPICAL APPLICATIONS



(A) Rod threaded to top cap (B) Furnished with single lug (C) Two lug style (D) Top adjusting (E) Adjustable top and bottom (F) For floor support (G) Trapeze assembly.

In addition to their proven corrosion and weather resistance, these spring hangers offer other features.

- Maximum variation in supporting force for standard spring models per ½" of deflection is 10½% of rated capacity — in all sizes.
- Precompression (a patented feature) assures operation of spring within its proper working range, as well as saving valuable erection time. Reduced over-all height saves space.
- 21 sizes available from stock for load ranges from 50 lbs. to 28,200 lbs.
- Available in 3 spring lengths for maximum travel of 1¼, 2½, and 5 inches.
- Installation simplified by integral load scale and travel indicators.
- All-steel welded construction meets pressure piping code.

For hanger installations which are subject to highly corrosive industrial conditions — or where exposed to severe weather, Grinnell makes available two distinct lines of pre-engineered spring hangers.

These hangers are the result of extensive experimentation with various coatings for Grinnell's standard pre-engineered spring hangers. In addition to providing flexibility in pipe suspension, they provide versatility of application through their corrosion-resistant characteristics.

1. NEOPRENE COATED — for highly corrosive conditions, such as those found in chemical plants and refineries. All parts of the hanger are neoprene coated to protect the base metal from a wide range of corrosives. The flex life of the spring is unaffected by the neoprene . . . the coating resists cracking or flaking over a wide temperature range.

2. GALVANIZED — for outdoor installations, where weather conditions are severe. All parts of the hanger are galvanized except the spring, which is neoprene coated to avoid alterations of temper, hydrogen embrittlement and decreased flex-life of the spring — usual hazards to springs from the galvanizing process. Write for further details.

GRINNELL

AMERICA'S #1 SUPPLIER OF PIPE HANGERS AND SUPPORTS

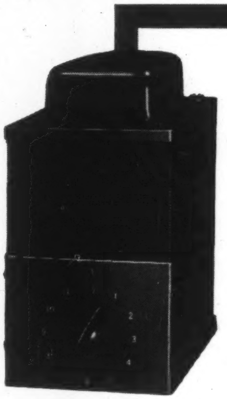
Grinnell Company, Inc., Providence, Rhode Island • Coast-to-Coast Network of Branch Warehouses and Distributors

pipe and tube fittings • welding fittings • engineered pipe hangers and supports • Thermolier unit heaters • valves
Grinnell-Saunders diaphragm valves • pipe • prefabricated piping • plumbing and heating specialties • water works supplies
industrial supplies • Grinnell automatic sprinkler fire protection systems • Amco air conditioning systems

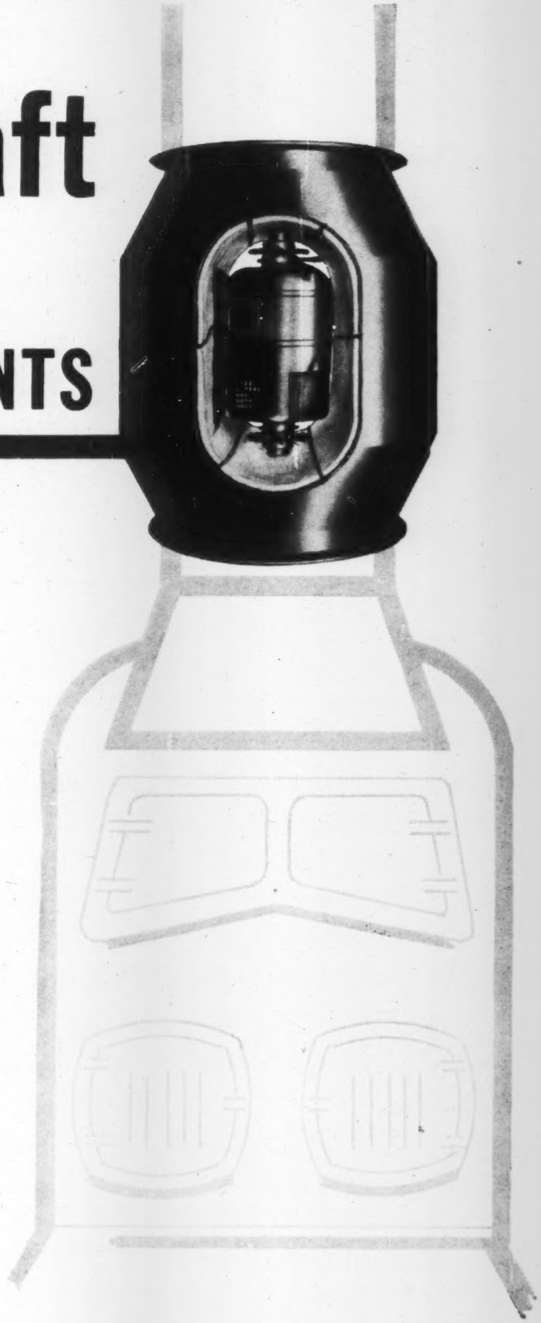
Regulate draft

ACCORDING TO

BOILER REQUIREMENTS



Remote motor controller changes fan speed from full to 50% reduction



Select the exact amount of draft needed for optimum boiler performance with this 11-step controller for single phase motors.* This controller can be conveniently located anywhere in the boiler room. Provided as standard equipment with a DeBOTHEZAT Induced Draft Bifurcator Fans, the motor speed controller keeps draft in pace with fluctuating boiler loads to conserve fuel.

Space-saving Induced Draft Bifurcators, with 12″ through 36″ fan wheel diameters, are available for high pressure boilers delivering up to 60,000 pounds of steam per hour and low pressure boilers delivering up to 190,000 EDR.

**9-step controller for 3-phase motors also available.*

FOR FURTHER INFORMATION
SEE OUR CATALOG IN
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OR WRITE FOR COPY

De Bothezat FANS
A DIVISION OF
American Machine and Metals, Inc.
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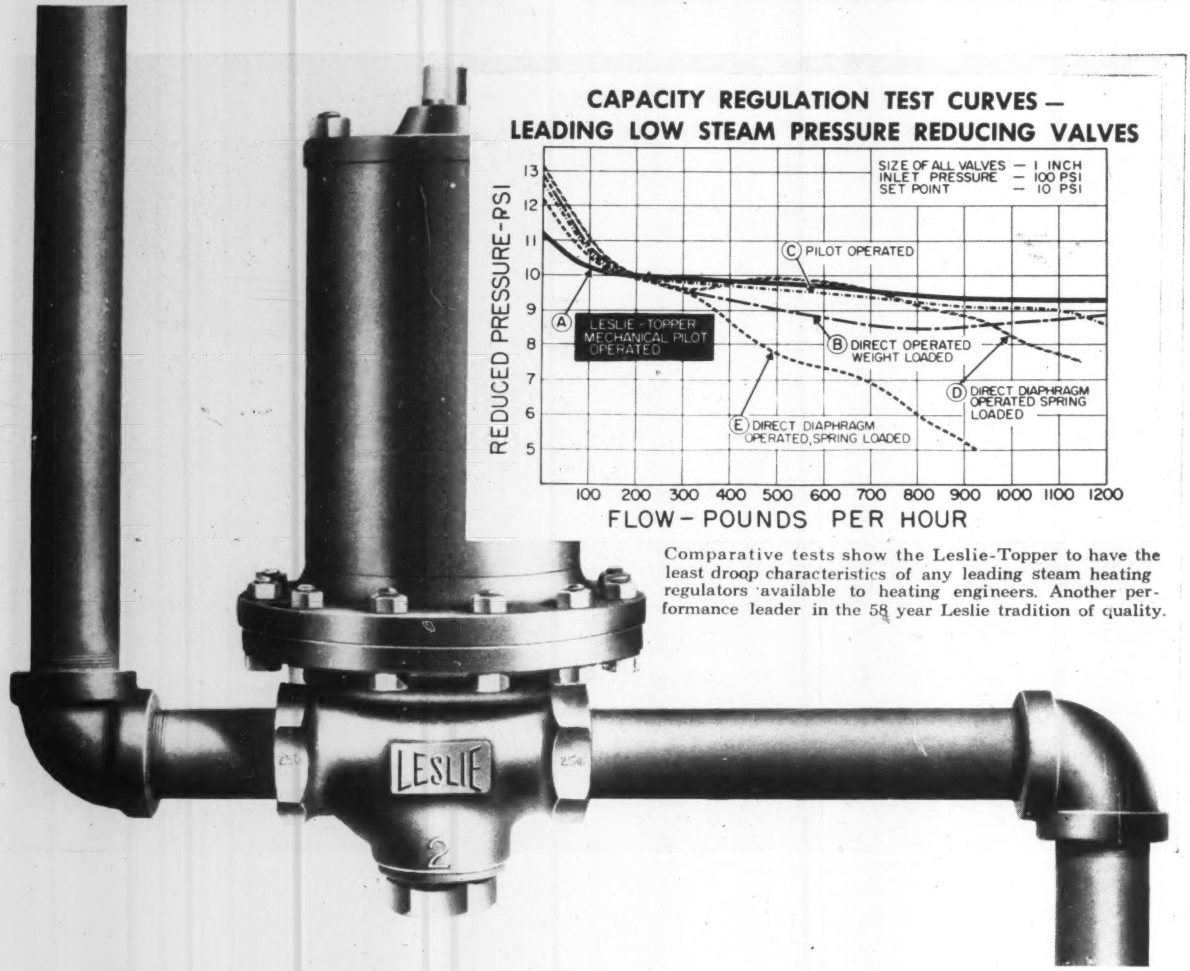
IN CANADA: Represented by DOUGLAS ENGINEERING CO., Ltd., Toronto • Montreal

revolutionary pressure reducing valve with mechanical pilot out of steam path

ELIMINATES MAINTENANCE



Comparative tests show the Leslie-Topper to have the least droop characteristics of any leading steam heating regulators available to heating engineers. Another performance leader in the 58 year Leslie tradition of quality.

Now . . . a mechanical pilot operated reducing valve with direct operated simplicity and steam pilot accuracy . . . proven in comparative tests with other leading regulators a new concept in maintenance-free steam pressure reduction . . . the **LESLIE-TOPPER**

- Inlet pressures from 7 to 250 psi — reduced pressure ranges from 2 to 35 psi.
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- Piloting device entirely outside the path of steam.
- No dirt catching or close fitting parts — Use it for intermittent, continuous or standby service with complete confidence.
- Packless construction.
- Long life, long travel, *metal* diaphragm.
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- No auxiliary operating air required.

All of this adds up to new reliability, freedom from maintenance and shutdown time. All of these extra quality features are available at less initial cost than any steam pilot or direct operated regulator you would endorse with your specification.

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LESLIE CO., 315 Grant Ave., Lyndhurst, N.J.

Heating Piping & Air Conditioning

Vol. 31, No. 1

(With which is merged the Aerologist)

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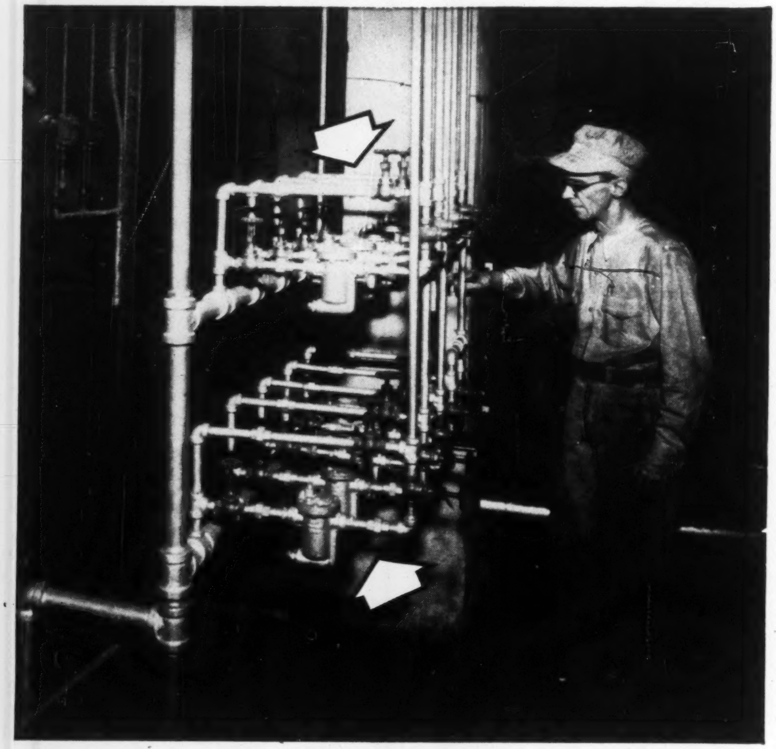
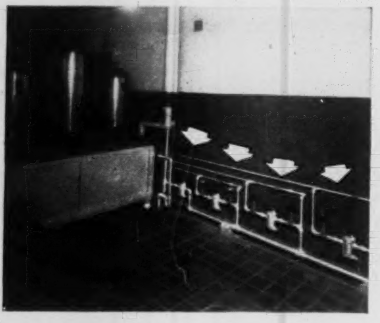
Good Trapping Practice with Good Traps Roy Davis, Maintenance Superintendent, looks over one of the well-engineered Armstrong trap installations he has made at the Masonic Temple in Detroit. Traps discharge to 15" vacuum.



Keeping the Coffee Perkin' with Armstrong traps draining steam heated coffee urns.



Detroit's Masonic Temple Solves Vacuum Loss by Installing Armstrong Inverted Bucket Steam Traps

MANY AN engineering hour has been spent ferreting out the leaks in a vacuum return system. Here's a tip if you have the problem: *check your steam traps.* Don't worry about *flash* steam from traps — look for the traps that are leaking *live* steam. Take the case of the big Masonic Temple in Detroit:

The 11,600,000 cubic foot building has banquet space for 4500 persons at a sitting. Imagine the bedlam in the kitchen when the steam heated cooking equipment couldn't meet dinner schedules! — simply because condensate drainage was sluggish. The cooks were always in a stew and calls to the maintenance department were daily occurences.

The building buys 35 lb steam from Detroit Edison. Line pressure is used for the cooking kettles, while regulating stations supply 2 to 3 lb steam for the heating system.

Couldn't Hold Vacuum

Prior to the installation of Armstrong traps, maximum vacuum attainable was 4 inches and in some cases it was necessary to manually drain the systems and dump the condensate.

According to Roy Davis, Maintenance Superintendent, the installation throughout of Armstrong inverted bucket steam traps has solved the problem. "*I don't remember having had the chefs complain since . . . the kettles heat in a hurry now.*"

F. W. Emblin, Operations Manager, adds, "*You can check the vacuum gage any time now and seldom find less than 15" showing.*"

There's another nice part to this story that only time will reveal: Armstrong traps have a habit of delivering this kind of service on low pressure vacuum return systems for years and years without repairs. Your local Armstrong Representative has plenty of cases he can tell you about. Why not call him today?

ARMSTRONG MACHINE WORKS
8744 Maple Street • Three Rivers, Michigan

FACT-FULL LITERATURE FOR YOU

THE ARMSTRONG STEAM TRAP BOOK
VACUUM

FREE: 44-Page Steam Trap Book plus two reprints explaining facts about trap operation on vacuum return service.

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Please send Steam Trap Book, "Flash at Traps" and "Vacuum Isn't Vacuum."

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UNSURPASSED QUALITY, meeting the strictest refrigeration and air conditioning industry standards for dryness and purity.

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UCON Refrigerant 22 Monochlorodifluoromethane
UCON Refrigerant 113 Trichlorotrifluoroethane
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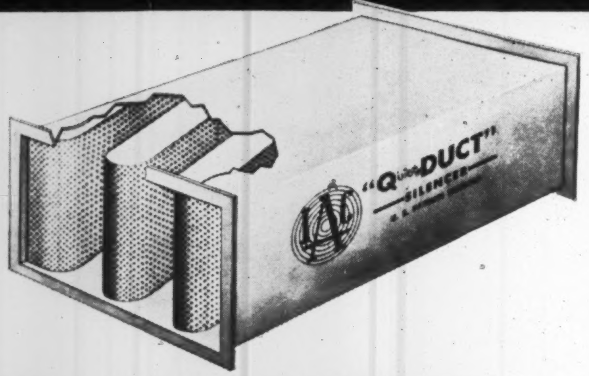
UNION CARBIDE CHEMICALS COMPANY *Division of Union Carbide Corporation*

Quiet-DUCT

Standardized Package Silencers Have Silenced A "City Of Buildings!"



Quiet-DUCT Silencers

NOW AVAILABLE IN 200 STANDARD SIZES!

Quiet-DUCT Silencers are engineered units having proven acoustical and airflow performance in the silencing of heating, ventilating and air conditioning systems. Easily fitted into existing systems, or in the design stage of new projects, *Quiet-DUCT Silencers* provide the following advantages:

1. Quiet-DUCT Silencers measuring in length from 2 to 10 feet will give as much attenuation as a conventional lined duct measuring from 20 to over 100 ft. long, depending on the frequency involved.
2. Quiet-DUCT Silencers eliminate empirical formulae and co-efficient "guesstimates" from the acoustic design of air-conditioning, heating and ventilating systems as all attenuation data has been determined by actual tests in our laboratory and verified by independent laboratories.
3. Air-Flow vs. Pressure Drop data has also been verified by independent laboratory tests.

Quiet-VENT Silencers

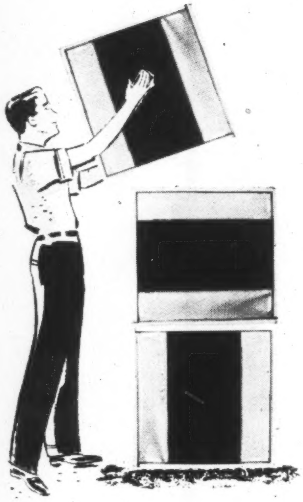
IAC Quiet-VENT

Quiet-VENT Silencers are special size *Quiet-DUCT Silencers* for installation on doors and walls of air-conditioned and ventilated rooms! These unique silencers permit the free circulation of air while preventing the passage of sound in either direction.

Quiet-VENT Silencers are designed to fit snugly inside walls or to "hug the wall" and are available in depths of 3½", 5" and 7"; and in widths of 30" and 42"; to handle 260 to 1710 cfm each. Used in offices, factories, apartments, homes, etc.

MOD-U-SIZE

Quiet-DUCT Silencers

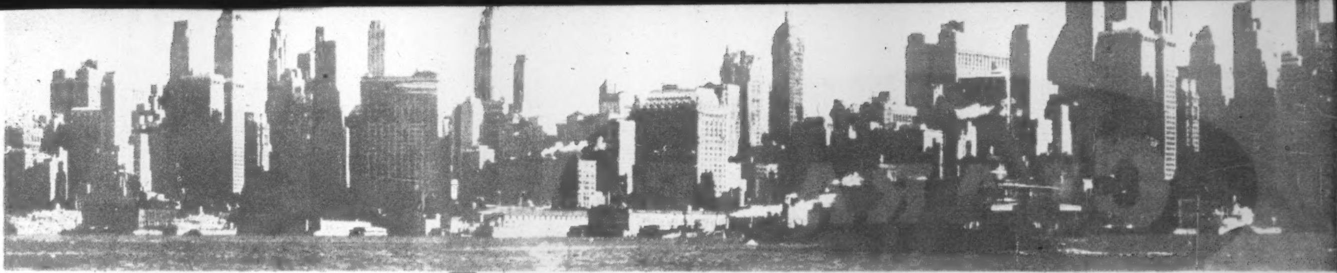


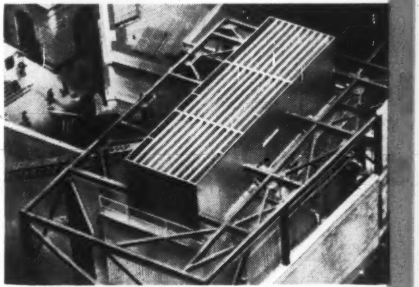
3 ECONOMICAL STOCK SIZES

FULL SIZE	HALF SIZE	QUARTER SIZE
24" x 24"	12" x 24"	12" x 12"

MOD-U-SIZE *Silencers* actually cost 20% less than other silencers—an economy made possible by production-line volume of popular sizes.

MOD-U-SIZE *Silencers* achieve further economies by reducing handling and installation costs. They can easily be built-up in parallel or in series to meet any capacity and acoustic requirement. Their smaller MODULE size enables them to be easily transported through existing doorways, etc.





COOLING TOWER

Quiet-FLOW Silencers

Cooling Tower Noise is controlled by *"Quiet-FLOW" Silencers* using special acoustic panels; and adjustable resonators when necessary.

Quiet-FLOW Silencers for Cooling Towers are designed to assure proper attenuation of both intake and exhaust. They are designed for minimum pressure drop to meet your specifications.

"Specialists in Noise and Pulsation Control"

IAC
Your Standard of Silence

Air Conditioning Department
INDUSTRIAL ACOUSTICS COMPANY, INC.
341 Jackson Ave., New York 54, N. Y.
CYpress 2-0180

Conic-Flow

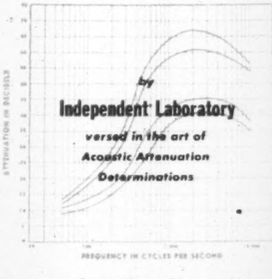
Quiet-DUCT Silencers

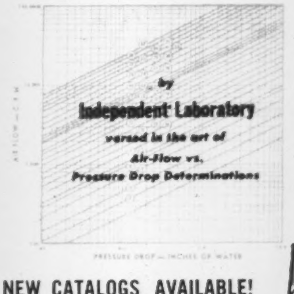
AVAILABLE IN 100 STANDARD SIZES!

Conic-FLOW *Silencers are designed especially for axial flow fans and the* Higher Pressure *systems.* Conic-FLOW *Silencers* are constructed in lengths from 2 to 10 feet and provide equal attenuations achieved with 20 to 400 feet of lined duct. Engineered and manufactured to an exclusive design for maximum attenuation, Conic-Flow *Silencers* can be used for high pressure as well as low pressure systems. They are applicable to jobs having high acoustic sound pressure levels.

PROVED BEST BY TEST!

Performance of Quiet-DUCT Silencers Verified by Recognized Independent Laboratories!





Be sure of getting the results you want by specifying Quiet-DUCT Silencers.

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INTERNATIONAL HEATING &
AIR CONDITIONING
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CONVENTION HALL PHILADELPHIA
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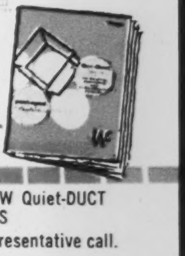
NEW CATALOGS AVAILABLE!

Complete technical data: attenuation, airflow vs. pressure drop, and size; are available in the new Quiet-DUCT Catalogs. Send coupon.



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New York 54, N. Y.

☐ SEND NEW Quiet-DUCT CATALOGS
☐ Have representative call.

Name________________ **Title**________
Company________________________
Address________________________
City____________ **Zone**_____ **State**______

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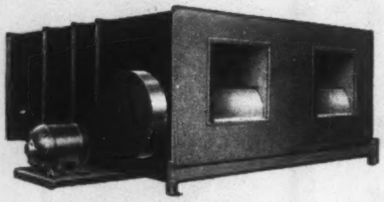
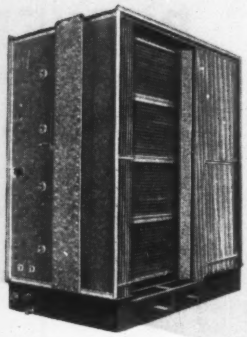
...dependable equipment for making air your servant

New AIRFOIL FAN
ON DISPLAY BOOTHS 534 & 536
ASHAE SHOW, PHILADELPHIA

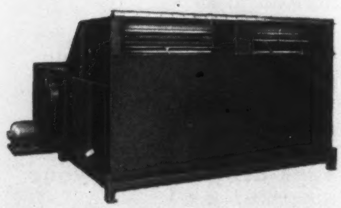


Draw-Thru Multitherms* for comfort and process air conditioning applications. Sprayed coil units also available. Catalog 1307. Hi-Static Multitherms for pressures to 8" SP. Bulletin 1312. Capillary Conditioners for exceptional air cleaning. Catalog 1351.

Air Washers Capillary (shown) and Spray Type Air Washers for air cleaning and purification. **Catalog 405** for Capillary type; **Catalog 400** for Spray type.

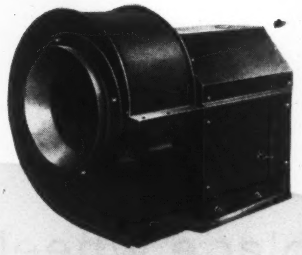


Unicoil* Units Sprayed coil equipment designed principally for cooling and dehumidifying service in central station air conditioning systems. Cutaway view above. **Catalog 411.**

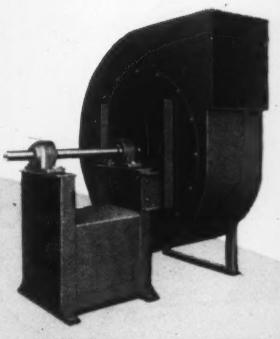


Blow-Thru Multitherms* for zone control air conditioning. A single unit handles different needs simultaneously in different areas by a separate set of mixing dampers for each zone. **Bulletin 1310.**

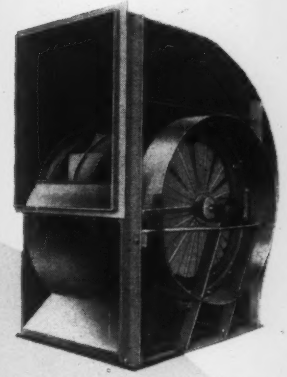
CFCo Clarage Fan Company



Ready Unit* Ventilating Sets Complete ready-to-run units for smaller air handling requirements. Direct connected (Bulletin 500) and V-belt models (Catalog 515) in 18 sizes, capacities 100 to 14,000 cfm.

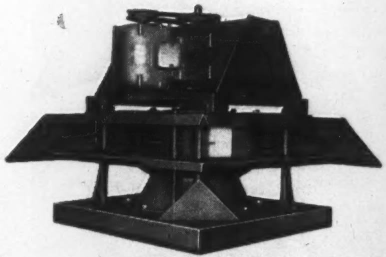


Type XL Fans range up to 130,000 cfm, 18" SP, 60" inlet diameter for industrial air and material handling assignments. Four wheel types, 16 fan sizes — smaller sizes adjustable as to discharge. **Bulletin 702.**

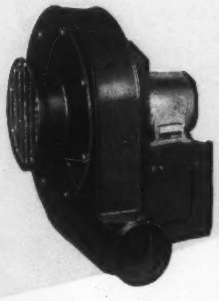


Ventilating and Air Conditioning Fans Type NH (shown) with backwardly inclined blade wheels, capacities 1,000 to 725,000 cfm. **Catalog 221.** Type HV Fans with forward curved multiblade wheels, capacities 150 to 450,000 cfm. **Bulletin 200.**

The Clarage line also includes Unitherm* Unit Heaters with multiblade fans, Catalog 1115 . . . Clarco* Unit Heaters with propeller fans, Catalog 1101 . . . Unit Stoker Fans, Bulletin 31 . . . Propeller Fans with capacities 700 to 36,000 cfm, Bulletin 520 . . . Vortex Control* for air volume regulation, Catalog 122 . . . Mechanical Draft Fans, Catalogs 905, 901, 802. By specializing — building air handling and conditioning equipment exclusively — Clarage has a concentrated "know-how" that means important dividends to you.



Centrilators*‡ Centrifugal type power roof ventilators with an exclusive Clarage Jet Siphon*‡ feature for quiet performance, high efficiency. 10 sizes, capacities to 26,400 cfm. Shown uncovered. **Bulletin 550.**



Type O Fans for industrial applications ranging to 50" SP and to 13,000 cfm. Wide selection of sizes and wheel diameters permits precise selection of the proper unit. **Catalog 855.**

Type CI Fans with cast iron housings, primarily for smaller volume exhaust applications. Capacities 200 to 3,800 cfm, pressures to 24" SP. Adjustable as to discharge. Two wheel types. **Catalog 705.**

*Trademark
‡Patent applied for

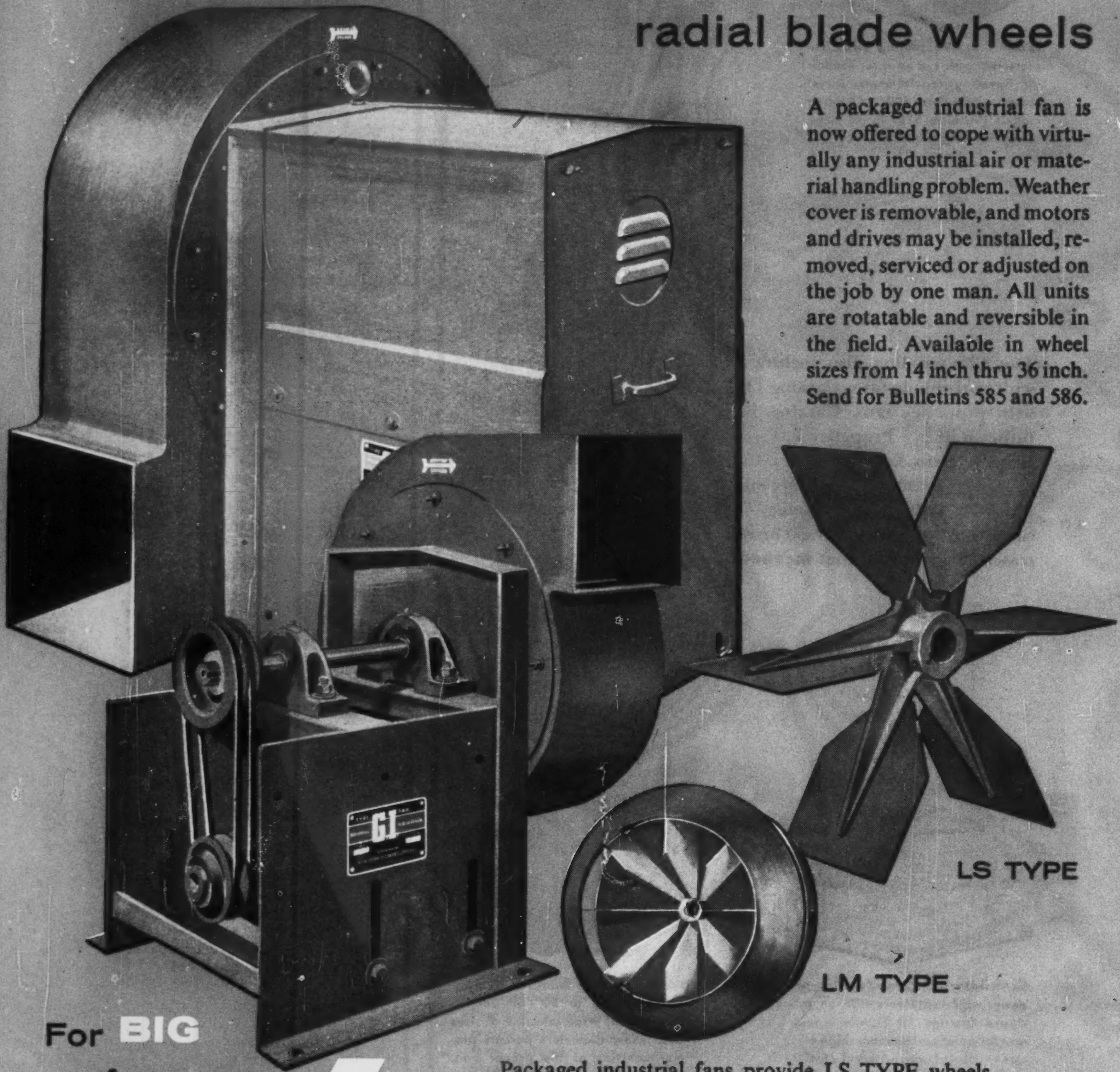
Kalamazoo, Michigan

...economical G. I. type

PACKAGED INDUSTRIAL FANS

...featuring flat radial blade wheels

A packaged industrial fan is now offered to cope with virtually any industrial air or material handling problem. Weather cover is removable, and motors and drives may be installed, removed, serviced or adjusted on the job by one man. All units are rotatable and reversible in the field. Available in wheel sizes from 14 inch thru 36 inch. Send for Bulletins 585 and 586.



For **BIG** performance

Packaged industrial fans provide LS TYPE wheels as standard, but may be furnished with LM TYPE at slight additional cost. A completely redesigned line of industrial fans is also offered, with wheel sizes from 10 inch thru 78 inch.

nyb

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Sales Offices: 3149 South Shields Avenue • Chicago 16

LETTER FROM THE EDITOR

January 1959

Dear Reader:

This "Letter from the Editor" is the first of several changes you'll notice in this month's Heating, Piping & Air Conditioning. In it, I want to highlight regularly a number of our articles, give some of their background, point out their importance and interest to you. I plan to do this each month, the idea being to conserve your reading time and to make doubly sure you don't miss anything you wouldn't want to overlook.

It is my hope that you will come to look upon this "Letter" of mine -- as the months go by -- as a personal one to you. Needless to say, I'll be especially happy if you'll reply on occasion and when the spirit moves. Your comments on any of our articles, or any other matters of interest to engineers and contractors concerned with the heating, piping, or air conditioning services in industrial plants and big buildings, will be more than welcome. And so will your suggestions for article subjects you'd like covered in our pages.

I said this letter was one of several changes this month. So it is . . . . and there'll be a number of other improvements in Heating, Piping & Air Conditioning in coming months. But for the moment I want to stick to this January issue.

A new, regular feature that starts this month is our "HPAC Engineering Data File." Printed on special paper stock, it will comprise a carefully prepared round-up of the latest and most up-to-date information on some important heating, piping, or air conditioning subject. At times, it will be written for us by a special contributor, drawing on many sources for the best data that can be had. At other times, it will be staff-prepared -- again going to the best sources for our information. At all times, it will be important, authoritative, and will be material not available -- or not easily available -- in any other place.

This month's "HPAC Engineering Data File" is on valves for power and process piping. Carl Dopp -- who prepared it on special assignment -- has had many years of piping experience, and is a member of our Board of Consulting and Contributing Editors. He went to numerous sources for information, checking and criticism before we set a line of type. He's assembled a wealth of material -- too much to publish in a single issue. So there'll be more "Data File" features on valves in coming months -- as well as on many other heating, piping, or air conditioning subjects. Some of them now being planned include air pollution and its control, high temperature hot water heating systems, industrial ventilation and industrial environment, operation and maintenance methods for heating and air conditioning systems, etc.

Several of our familiar editorial departments have been given something of a new look. For example, this "Letter" of mine replaces the old "Editors' Pages" and the news formerly printed there is now incorporated in the expanded "You'll Want To Know . . .'' department. And those regular, popular editorial departments of many years' standing -- "Open for Discussion" and "Question of the Month" -- while unchanged in content or appearance, will be given more space in the future. That's a change we've had to make, in order to keep up with the excellent comments, questions and answers that HPAC's readers send me for publication.

Another old "friend," also unchanged except in appearance, is the "HPAC Data Sheet," a regular feature of Heating, Piping & Air Conditioning for many years. It will continue to present boiled-down, helpful reference data for convenient use. Starting this month, it will be printed on a yellow sheet to make it easier to find quickly. Hope you'll like that minor change.

Speaking of "yellow pages," you'll find this January -- as every January -- a complete "Directory Section of Heating, Piping, and Air Conditioning Equipment for Industrial, Commercial, Institutional, and Public Buildings." Each year, the listings are carefully checked and brought up-to-date. Each year, the Directory Section is more complete, more carefully classified. It's divided into four parts -- products advertised in this issue, all products classified, trade names, complete addresses. We know you'll want to keep it for use throughout 1959.

And there's another special section this month, too. It's a complete preview of the 14th International Heating & Air Conditioning Exposition to be held in Philadelphia January 26th through the 29th. If you will be there for this big show, you'll find the listing of exhibitors and what they'll be exhibiting of help in saving your time at Philadelphia. If you don't get to the exposition, the listings in our Show Section can serve as a "tour in print" of the big affair.

With all the special features in this January issue, and the improved editorial content -- some of it this month and some of it to come -- one "missing" editorial feature may escape your notice. Last month, the American Society of Heating and Air-Conditioning Engineers and the American Society of Refrigerating Engineers voted to merge their two organizations into an over-all society. While the merger will not actually go into effect until later in the year, and many details -- for example, the divisional set-up to meet the wide and varied needs of the members of the merged group -- remain to be worked out, the vote meant that the ASHAE's journal will no longer be published as a part of Heating, Piping & Air Conditioning's editorial content.

We've expanded our editorial staff, and reassigned the editorial duties of other staff members, in order to follow through on our plans for the coming months. Don Bahnfleth has joined us as our new Engineering Editor. Until his resignation last month to undertake his duties on Heating, Piping & Air Conditioning's staff, he was research assistant professor in mechanical engineering at the University of Illinois.

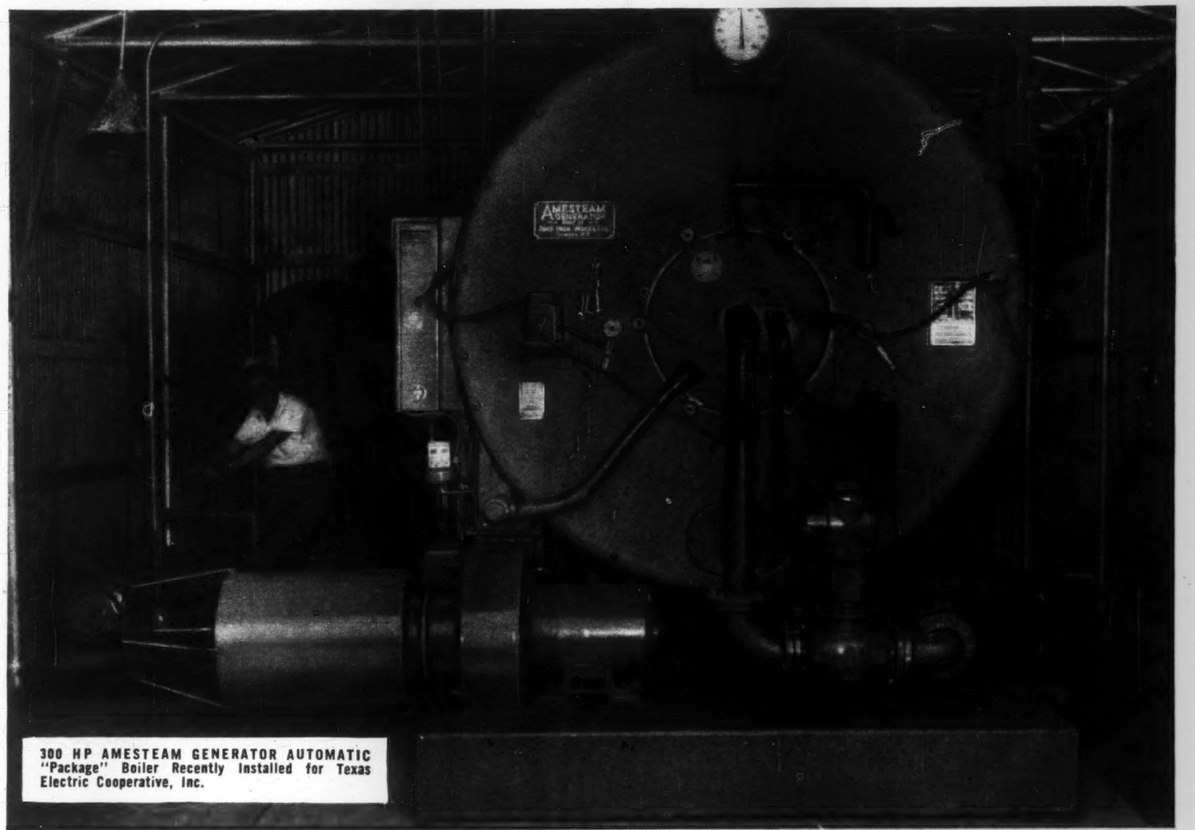
With our larger, reorganized editorial staff -- and an increased editorial budget -- we're planning expanded coverage of the important technical society and other meetings of significant interest to heating, piping, and air conditioning engineers and contractors. As in the past, we'll continue to try to keep our reports from being dull recitals of names, times, and unimportant details. Rather, it will be our endeavor to give you a well-rounded and accurate report of the truly worthwhile technical information that often develops, both officially and unofficially, at meetings of this kind.

Perhaps I'd better at least mention the regular monthly departments you'll also find in this issue -- Sam Lewis' pertinent, interesting comments based on his many, many years of heating, piping, and air conditioning experience; and the "back-of-the-book" columns on equipment developments, recent trade literature, who's what, new books and reports, meeting and convention dates.

And -- of course -- a full quota of articles, as always, carefully balanced so as not to neglect any topic of interest to heating, piping, and air conditioning engineers and contractors as the months go by. As I mentioned, I want to highlight each month's articles in this new "Letter" of mine and I plan to do this in the future. But I've had to use my space this time on the new and special features of this particular issue.

Bob Roose

Editor, HEATING, PIPING & AIR CONDITIONING



300 HP AMESTEAM GENERATOR AUTOMATIC "Package" Boiler Recently Installed for Texas Electric Cooperative, Inc.

TEXAS ELECTRIC COOPERATIVE, INC.

Cuts Fuel Consumption Over 36%
Saves Over $15,000 per year
. . . with AMESTEAM GENERATOR

We Quote the Money-Saving Facts:

"We were very pleased when we replaced two gas-fired boilers in our presssure testing plant with one new 300 HP AMESTEAM GENERATOR Automatic "Package" Boiler. The new Ames unit has reduced our fuel costs alone by 38% . . . a saving of *$7,800 per year.*

"Because our new AMESTEAM GENERATOR is entirely automatic, three firemen are now transferred to other duties. This results in an additional saving of *$7,200 per year.*

"This total saving of *$15,000 per year* does not include the considerable savings in maintenance costs. On top of this, the new Ames installation increases our production potential by 20% to 30% . . . with much higher quality steam."

We at Ames continually receive letters like this from the enthusiastic users of AMESTEAM GENERATORS. Ames customers are *satisfied* customers. They know that when they buy AMESTEAM GENERATORS, they buy LOWER-COST STEAM!

What's Your Steam Problem?

If you need 10 to 600 HP and want the kind of space-saving, trouble-free service enjoyed by satisfied users of AMESTEAM GENERATORS, contact your nearby AMESTEAM Dealer or write for our Catalog.

AMES IRON WORKS INC.
BOX D-19
OSWEGO, N. Y.

AMES IRON WORKS
BOX D-19, OSWEGO, N. Y.

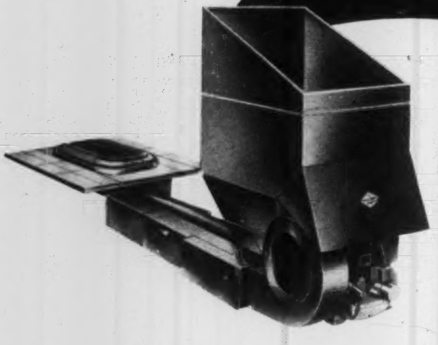
Gentlemen:
Please send me further information on AMESTEAM GENERATORS and name of nearest representative.

NAME ....
COMPANY ....
ADDRESS ....

WILL-BURT STOKERS

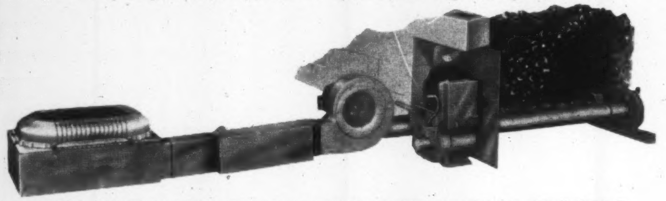
for institutional, commercial, and industrial buildings

CAPACITIES 65 through 750 lbs. per hour



HOPPER MODELS — BIN FEED MODELS — Refractory or Deadplate Types

Complete drawings, dimensions, suggested specifications, and typical installation drawings are provided in Will-Burt Reference Manual 30-G-3. The manual, including stoker layout tracing templates, sent on request. Suggested installation drawings and wiring diagrams are supplied on request by our engineering department.

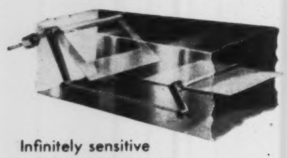


CONDENSED DATA — WILL-BURT HOPPER AND BIN FEED MODEL STOKERS

STOKER NUMBER			65	75	100	125	151	150	200	250	300	350	400	500	600	750
Coal Burning Rate (Approximate Lbs. Per Hr., Continuous Operation)			26 45 65	30 50 75	40 70 100	50 88 125	60 105 150	60 105 150	80 140 200	100 175 250	120 210 300	140 245 350	160 280 400	200 350 500	240 420 600	300 525 750
Steam Radiation			2110	2435	3250	4375	5250	5250	7000	8750	10500	12250	14000	17500	21000	26250
Water Radiation			3380	3900	5200	7000	8400	8400	11200	14000	16800	19600	22400	28000	33600	42000
Gross Output 1000's B.T.U. Per Hr.			507	585	780	1050	1260	1260	1680	2100	2520	2940	3360	4200	5040	6300
Boiler H.P.			15.1	17.5	23.3	31.4	37.6	37.6	50.2	62.7	75.3	87.8	100	125	150	188
Combustion Volume Min. Cu. Ft.			13	15	20	25	30	30	40	50	60	70	80	100	120	150
Setting Height Min. In.	Steel Boiler		23	24	27	28	28½	28½	30	31½	33	34½	36	39	42	46½
	Cast Iron Boiler		20	21	23½	24	25	25	26¼	27½	29	30	31½	34	37	40½
Motor H.P. Hopper Model			⅓	⅓	½	½	¾	¾	¾	1	1	1½	2	2	3	5
Motor H.P. Bin Feed Model	Power Unit		¼	¼	¼	¼	⅓	⅓	⅓	½	½	½	½	¾	¾	1
	Fan		⅓	⅓	⅓	⅓	½	¾	¾	¾	¾	1	1½	1½	2	3
Hopper Capacity			600	600	600	600	1000	1000	1000	1000	1000	1000	1000	1000	1000	1200
Fan Capacity C.F.M.			660	660	1320	1320	1320	1405	1405	1875	1875	2720	2720	2720	2720	4080
Coal Screw Diameter			3 5/16	3 5/16	3 5/16	3 5/16	3 5/16	4⅞	4⅞	4⅞	4⅞	4⅞	4⅞	4⅞	4⅞	4⅞
Coal Screw Removal	Std. Hopper Model, Min. Clearance Req'd., Inches		25	26	28	30	15	15	15	15	18	20	20	23	26	44
Weight Crated Lbs.	Standard Hopper Model	Refractory	760	810	850	900	1020	1470	1470	1500	1680	1750	1750	1810	1840	2005
		Dead Plate	—	—	—	1040	1160	1760	1760	1805	2000	2210	2210	2380	2440	2670
	Standard Bin Feed Model	Refractory	800	850	900	950	980	1590	1590	1650	1830	1900	1900	1960	2010	2070
		Dead Plate	—	—	—	1090	1120	1880	1880	1955	2150	2360	2360	2530	2610	2735

Load values given are based on over-all boiler and stoker efficiencies of 65%, to and including 100 lbs. per hr., and 70% for those stokers over 100 lbs. per hr. capacity, using coal with heat value of 12,000 B.T.U. per lb.

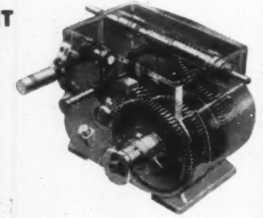
AUTOMATIC AIR CONTROL

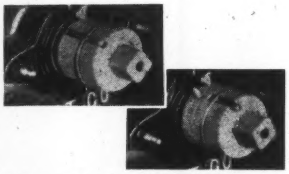


Infinitely sensitive to fuel bed air requirements—eliminates need for manual air adjustments.

3-FEED POWER UNIT

Continuous, satisfactory service of Will-Burt Transmissions of this same design for over twenty years is proof of their dependability.





SAFETY SHEAR PIN DISCONNECT

Protects against overload — pin easily replaced, service quickly restored.

THE WILL-BURT COMPANY • ORRVILLE, OHIO, U.S.A. • *Over 28 years in the stoker business*

COPPER TUBE made light, fast work of an otherwise tough, slow job of roughing-in for two new baths on the second floor of a large old single-family house which was renovated to make several apartments.

Go after profits in remodeling with time-saving, space-saving, money-saving COPPER TUBE

"I've seen lots of copper tube installed and know how easily it handles, but in this remodeling job, copper really proved its worth," says a plumbing contractor's superintendent.

"With copper tube and solder-joint fittings, the overhead work necessary was no problem. But think what a back-breaking, time-consuming operation this would have been using heavier materials requiring threaded or caulked connections. And note all the space we saved—thanks to trim copper tube and compact fittings.

"I wish every architect, builder, and plumbing contractor who is skeptical about the value of all-copper plumbing could have seen this job go in. And copper has the same advantages in new construction, too."

ROUGHING-IN for a bathroom on the third floor. Note small area of flooring removed—also that only small holes were needed in the old floor joists to install the copper tube waste line.

Whether you are adding a single bathroom or renovating the plumbing in an entire house, copper tube and fittings can make your work easier and more profitable. Contractors report their installation time with copper is reduced one third to one half.

Anaconda Copper Tubes are available in all standard wall thicknesses—Types K, L, M, and DWV (Copper Drainage Tube)—through your plumbing wholesaler. See him also for Anaconda wrought copper and cast-brass solder-joint fittings.

For more information on ALL-COPPER plumbing, write: The American Brass Company, Waterbury 20, Conn. In Canada: Anaconda American Brass Ltd., New Toronto, Ont.

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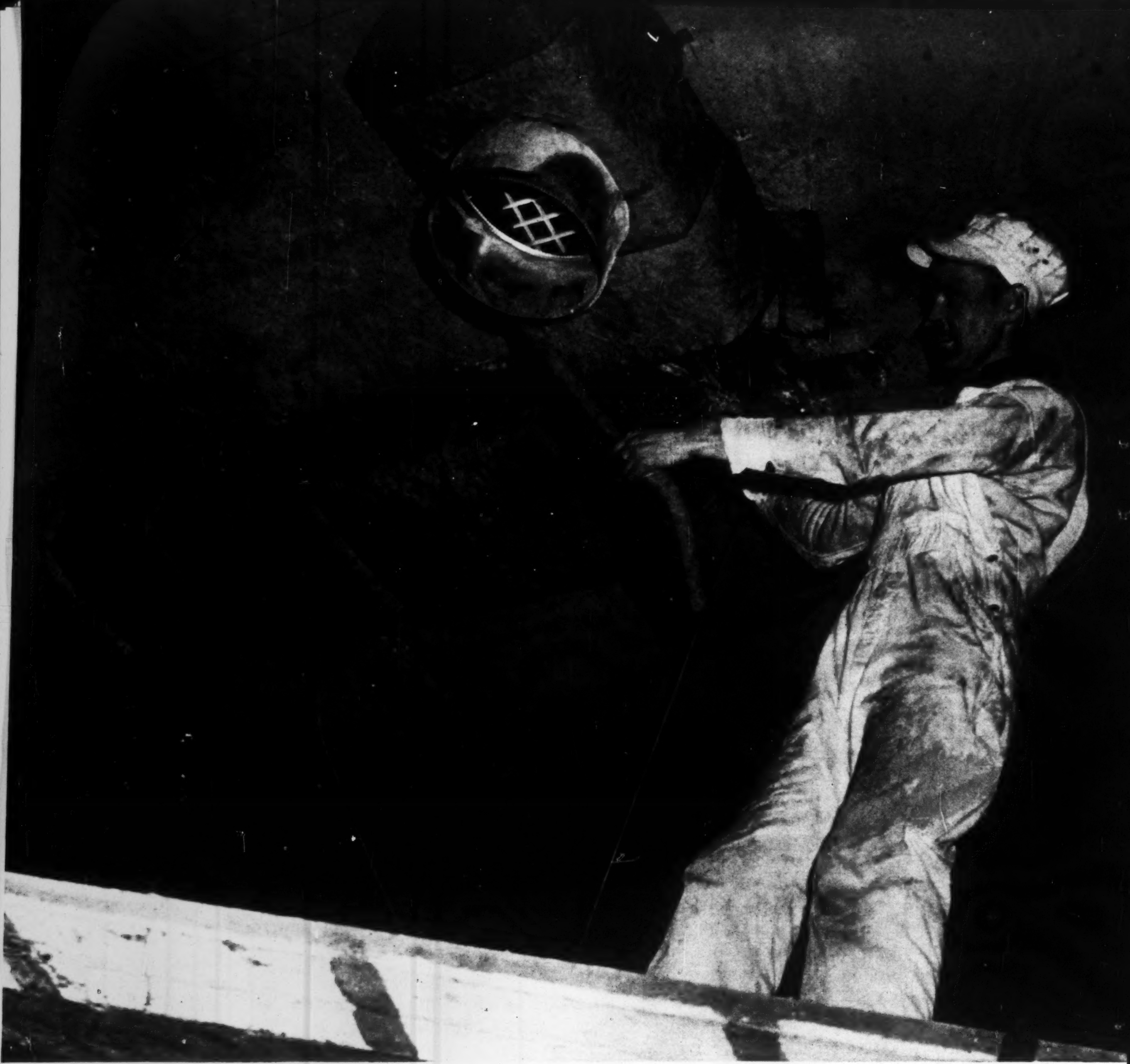
ANACONDA®

COPPER TUBES
AND FITTINGS

Available Through Plumbing Wholesalers

MADE IN U.S.A. TO THE STANDARDS OF AMERICAN INDUSTRY



They compared efficiency, permanence, and applied cost ...and bought ULTRALITE®

Compare . . . and you'll find that ULTRALITE is the only glass fiber duct insulation (and duct liner) made exclusively of long, strong, textile-type glass fibers. This means that ULTRALITE is stronger and more resilient than the rest . . . that it is more resistant to damage from vibration, air movement, and handling . . . that it offers more uniform thickness that results in full insulating efficiency and a neater job. *Compare* . . . and you will also find that ULTRALITE is outstanding in thermal efficiency and ease of application.

You pay not a penny more for ULTRALITE'S many advantages. You'll find it readily available in all major cities from local distributor stocks, plain or with a variety of factory-adhered facings that enhance appearance and prevent moisture condensation.

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CALL YOUR LOCAL ULTRALITE DISTRIBUTOR
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GUSTIN-BACON *Manufacturing Co* GUSTIN gb BACON

220 W. 10th St., Kansas City, Mo.

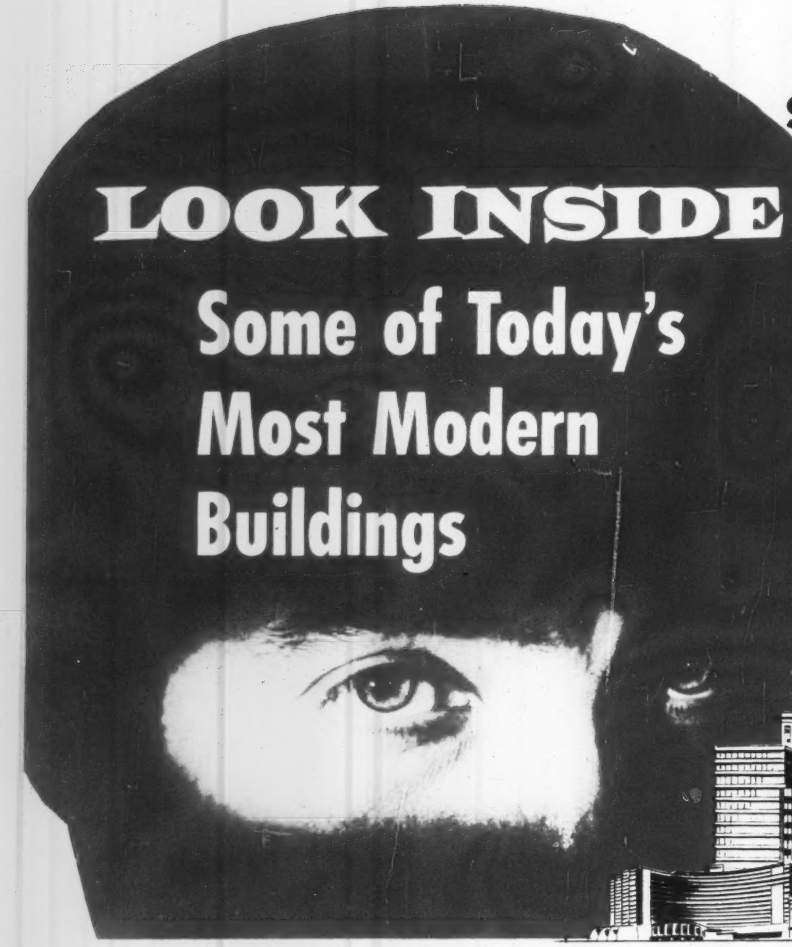
Thermal and acoustical glass fiber insulations . . . molded glass fiber pipe insulation
Plain and grooved end couplings and fittings

LOOK INSIDE....

SEE HOW YORK BORG-WARNER

CREATIVE PRODUCT ENGINEERING FOR COMFORT

NOW BRINGS YOU THE FOUR
BIG FORWARD STEPS IN
AIR CONDITIONING AND HEATING


LOOK INSIDE
Some of Today's Most Modern Buildings

see how YORK air s

The reason? YORK's paten
makes possible a Heat Pump
than conventional systems. I
20% more economical to ope

Using only outside air and

LOOK INSIDE

YORK's exclusive compound-compression des
makes Heat Pumps practical even in northern

- OPERATES EFFECTIVELY AT SUB-FREEZING TEMPERATURES
- FROM 42% TO 67% MORE HEAT FOR THE SAME POWER
- ELIMINATES COSTLY, SUPPLEMENTARY STRIP HEATING

**More YORK Central Station Air-Source Heat Pumps Hav
Been Specified Than Those Of All Other Manufacturers**

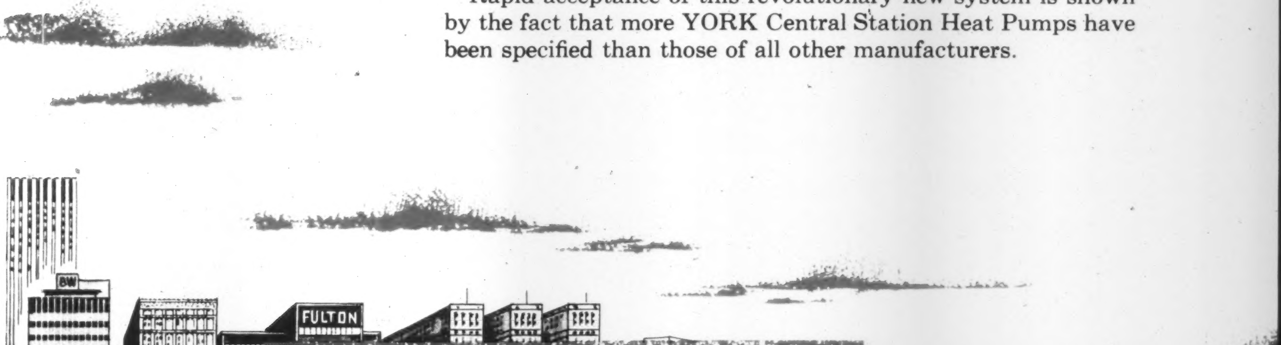
source Heat Pumps out-perform conventional systems!

tented compound-compression design
mp that delivers more Btu's per watt
. In actual installations, it has proved
operate.

nd incoming power lines (no coal, gas, oil or supplementary electric heaters are needed) a YORK Heat Pump maintains year-round comfort conditions in commercial and industrial buildings of all types and sizes—even in areas having winter design temperatures below freezing.

It has all the advantages of separate heating and cooling systems without the disadvantage of costly seasonal shutdowns and start-ups. Space normally provided for boiler rooms, fuel storage facilities and chimneys can be utilized for business profit production.

Rapid acceptance of this revolutionary new system is shown by the fact that more YORK Central Station Heat Pumps have been specified than those of all other manufacturers.



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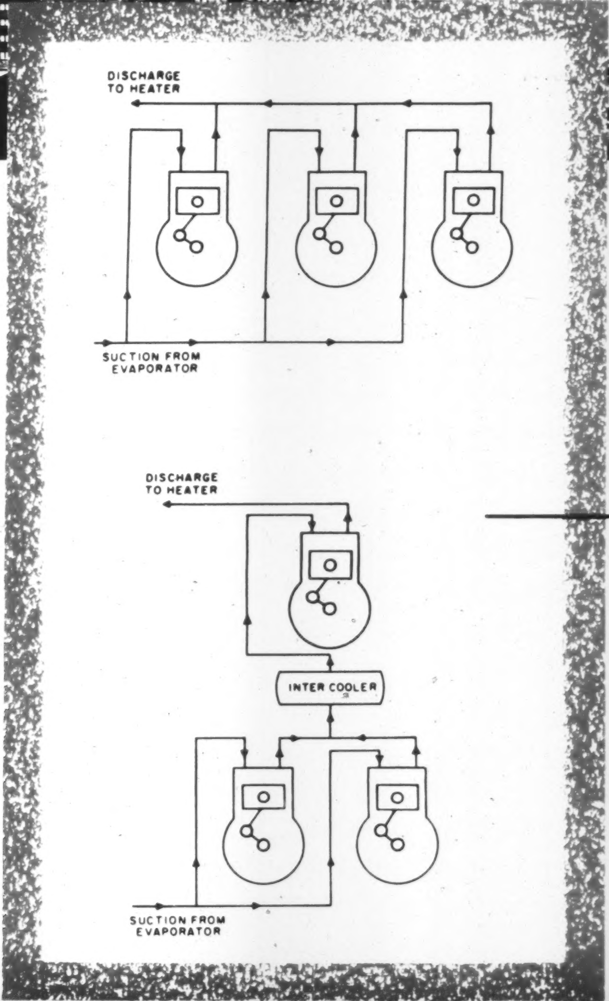


In single-stage compression, equal amounts of refrigerant are compressed in each cylinder. This method does not provide sufficient heat when outside air temperatures are below 25 or 35 F. Electric heaters must then be used.

In compound compression, equal amounts of refrigerant are first compressed in two cylinders. Some heat of compression is withdrawn in an intercooler. All the refrigerant is then compressed in the third cylinder to a higher temperature and pressure. This method provides sufficient heat even during subfreezing weather.

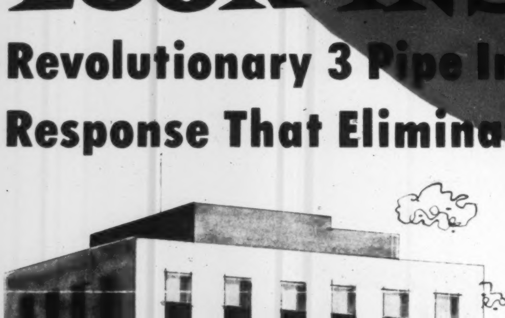
ave
s!

LOOK INSIDE

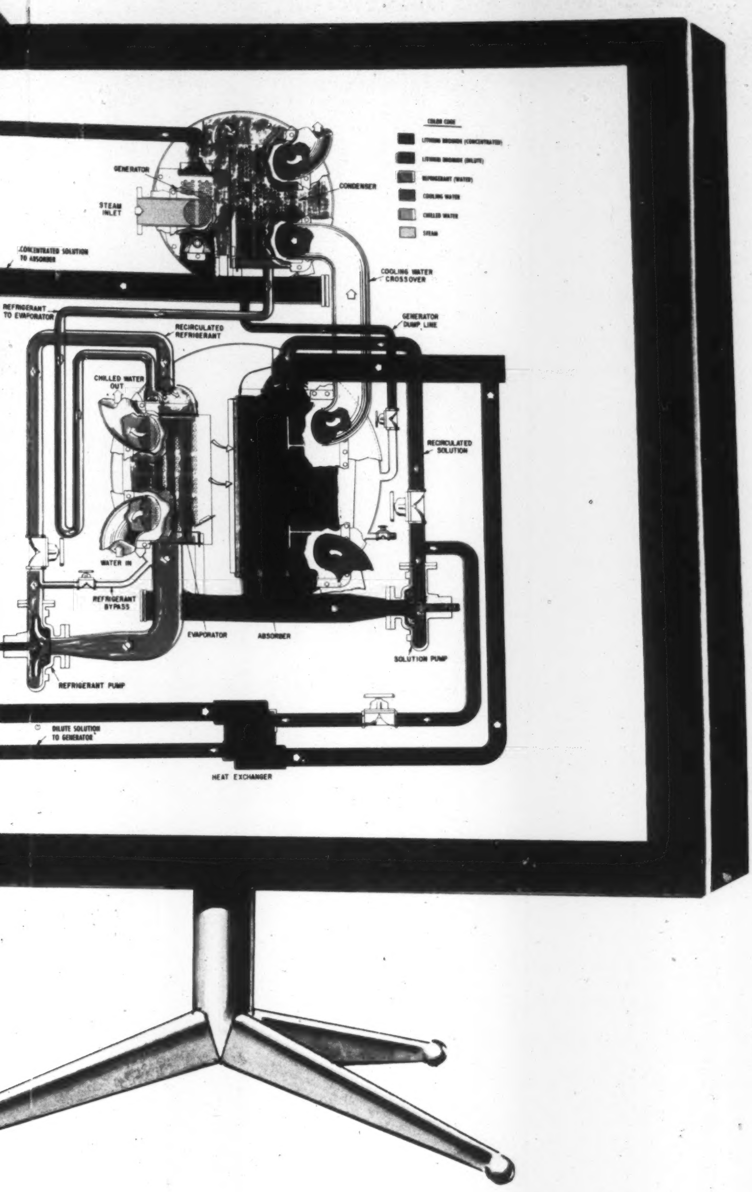
THE MOST ADVANCED
LITHIUM-BROMIDE
ABSORPTION SYSTEM
BACKED BY YORK'S 23 YEARS
OF EXPERIENCE IN
ABSORPTION REFRIGERATION

LOOK INSIDE

Revolutionary 3 Pipe Induction System With Instant Response That Eliminates Zoning of Air and Water



Here is an induction air conditioning system that is unusually simple to lay out, and yet possesses flexibility never before attained in systems of this kind.


COLOR CODE
LITHIUM BROMIDE (CONCENTRATED)
LITHIUM BROMIDE (DILUTE)
REFRIGERANT (WATER)
COOLING WATER
CHILLED WATER
STEAM
GENERATOR
STEAM INLET
CONDENSER
CONCENTRATED SOLUTION TO ABSORBER
COOLING WATER CROSSOVER
REFRIGERANT TO EVAPORATOR
RECIRCULATED REFRIGERANT
GENERATOR DUMP LINE
CHILLED WATER OUT
RECIRCULATED SOLUTION
WATER IN
REFRIGERANT BYPASS
EVAPORATOR
ABSORBER
SOLUTION PUMP
REFRIGERANT PUMP
DILUTE SOLUTION TO GENERATOR
HEAT EXCHANGER

You are looking at the latest development in automatic, heat-operated water cooling systems.

Low-pressure steam or high-temperature water is the activating medium. No motor drive, no expensive starters or heavy electrical conduit needed.

Tap water is the refrigerant, lithium bromide the absorbent. Once the system is charged they need never be replaced.

Savings in operation, installation and maintenance are the most important advantages here over motor-driven refrigeration systems.

In addition, YORK's perfected method of fluid distribution throughout the system requires less pump horsepower per ton of cooling.

Notice how the lithium bromide solution trickles over the outside surface of the steam-filled generator tube bundle. System responds faster at start-up and can be more closely controlled to meet sudden load changes. There's less noise, too.

Wherever low-pressure steam or high-temperature water is available — in office buildings, hotels, hospitals and industrial plants — there's a place for a YORK Lithium-Bromide Absorption System. Available in capacities ranging from 100 to 740 tons.

LOOK INSIDE

The First Completely Packaged Hermetic Centrifugal Water Chilling System

You'll see a factory engineered-and-packaged centrifugal water chilling system, complete in every sense of the word. It's the YORK single-stage TURBOPAK, and it's hermetic.

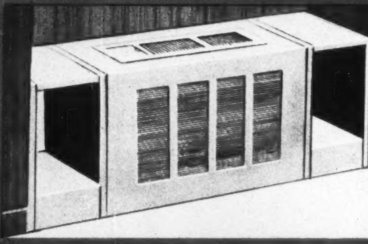
systems of this kind.

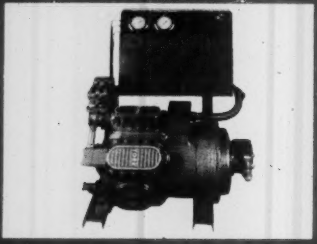
Designed around YORK's new Hi-I induction unit, the 3-pipe system eliminates summer-winter changeover and nighttime shutdown, and offers dramatic savings in power and steam costs.

No zoning of ventilating air or supply water is required. Constant quantities are delivered uninterruptedly to all points. Room temperatures are completely and automatically controlled at individual room units.

Automatic unit control valve provides room occupants with 50% greater personal comfort control the year 'round.

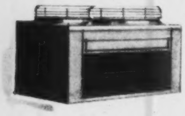
Plus!



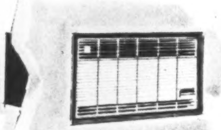


Hermetic Compressor unit, combines a proven YORK V/W compressor and a refrigerant-cooled motor, with an attractive, fully wired, totally enclosed control center. No belts, couplings or shaft seals. Requires less than seven square feet. In 10- to 45- ton nominal capacities.

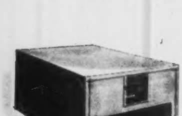
LOOK INSIDE York Packaged Products For Answers to Your Special Problems:



York Champion Air Conditioners for commercial use are air cooled...use *no water*...deliver 10 to 15 tons of natural cooling. Have step-start, step-capacity control.

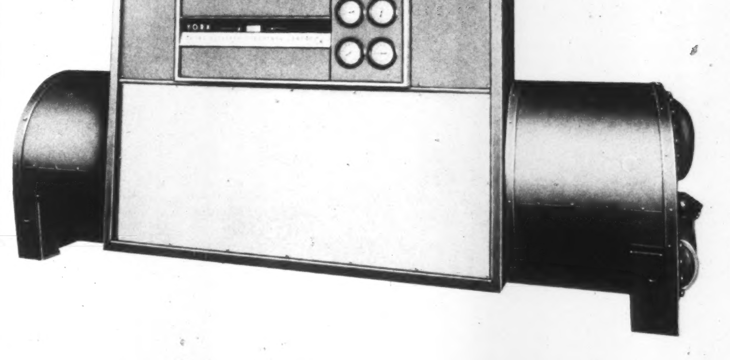


York Room Air Heat Pumps cool in summer, heat in winter. Three compact, stylish window units: (1) Citation, 230 V. (2) Medalist, 115 V, 7½ Amp., (3) Metropolitan, 230 V.



York Residential Heat Pumps cool in the summer, heat in the winter—using only outside air and electricity. Have twin cooling systems, twin auxiliary heaters.

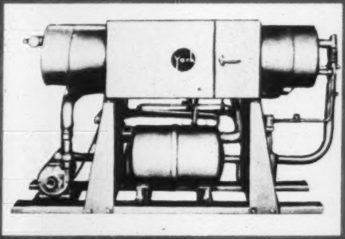
York Furnaces have exclusive Silver "V" Burners that provide more heat, more economically. Fully A.G.A. approved for use with natural mixed, propane or manufactured gas.



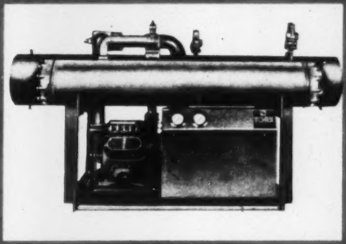
the world. It's the YORK single-stage TURBOPAK, and it's hermetic. Lighter and 50% smaller than any other comparable system, too. The secret lies in the built-in world-famous Borg-Warner transmission gear. There's a fully wired, electronic control center for precise, automatic capacity control. One piece, rigid base construction simplifies layout, eliminates field assembly.

Hi-I Induction Unit, featuring YORK patented primary air nozzles for quiet operation, meets air conditioning requirements for high secondary-coil capacities. Attractive factory-fabricated enclosures for that "built-in" look are also available.

Fan-coil Air Conditioners are available in 20 floor-, wall-, and ceiling- mounted models—the widest selection offered. Units have Underwriters' Laboratory Approval and feature permanent, low-current drawing, split-capacitor fan motors.



HYDRALINE Packaged liquid chiller, features YORK "sealed-in-steel" hermetic compressor, fully insulated water chiller, water cooled condenser, chilled fluid pump, piping and wiring, and refrigerant and oil charge. Nominal capacities 7½ to 15 tons.



YORK V/W packaged water chiller, the smallest of its kind, comes complete with interconnecting piping, automatic controls, wiring and insulation. Flooded-type cooler and positive refrigerant-feed control assures maximum efficiencies. Available in capacities from 18 to 250 tons.

Certified Maintenance

For system performance without maintenance worries, a YORK Certified Maintenance Contract is what you're looking for. Gives you complete maintenance, regular inspections, emergency service when required, all parts and repairs, spring and fall changeover, and start-up and shut-down. All for a nominal, agreed-on-in-advance fee.

LOOK INSIDE

ALL THAT'S NEW IN
AIR CONDITIONING
AND HEATING

Visit YORK Booth 150-250-350-450 at the International
Heating and Air Conditioning Exposition
Philadelphia Convention Hall
January 26-29

YORK
YORK CORP. SUBSIDIARY OF BORG-WARNER CORP.

BW

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RESEARCH & ENGINEERING
MAKE IT BETTER

Air Conditioning, Heating, Refrigeration and Ice Equipment • Products for Home, Commercial and Industrial Installations

O-B VALVES

easy gate valve maintenance starts here. . .

O-B Union Bonnet Gate Valves are designed to meet industry's need for valves that are easy to maintain. They can be broken for inspection and servicing, then quickly and accurately reassembled. Each time the union ring is pulled down it makes a leaktight joint. Body and bonnet mating surfaces come together in a tight seal that cannot become loosened during ordinary operation. The union ring also adds strength at the bonnet joint, keeping internal pressures from spreading the body neck.

Number 9100 and 9300 rising stem valves are made of quality bronze in ¼″ thru 3″ sizes. Ask your distributor about these and other O-B valves, or write to Ohio Brass Company, 380 North Main Street, Mansfield, Ohio.

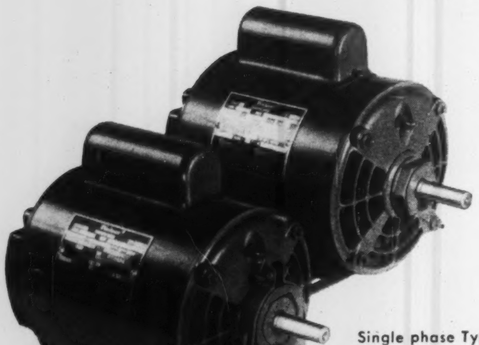
NEW O-B
Union Bonnet Gate Valves
No. 9100 for 125 lbs. WSP
200 lbs. WOG
No. 9300 for 150 lbs. WSP
300 lbs. WOG
150 WSP 300 WOG

4990-V

Need all-angle operation?

WAGNER CAPACITOR-START MOTORS

operate in ANY position . . . provide dependable starting . . . *pack more power into less space!*



Single phase Type RK, 1/6 through 5 hp. Sleeve or ball bearing. rigid or resilient mount.

Here's the answer for applications that require angle mounting of fhp motors. Wagner Type RK sleeve bearing motors, in fractional ratings, have a positive lubrication system that permits operation in any position.

You get quick, trouble-free starts—thanks to a Wagner designed quick break switch—and you get more horsepower with less bulk, for a better chance to lick those tough space problems.

You can get these motors from leading motor distributors in your community and from Wagner Sales Offices in 32 principal cities. Your Wagner Sales Engineer will be glad to help you select the right motor for your application. Wagner Bulletin MU-217 gives full details.

WM59-6

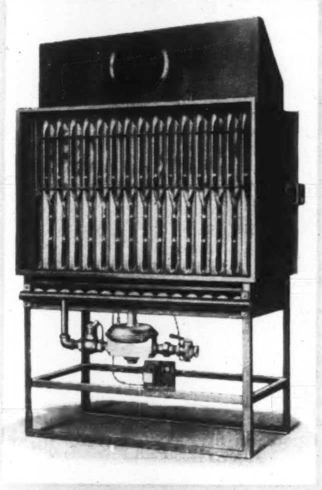
BRANCHES AND DISTRIBUTORS IN ALL PRINCIPAL CITIES

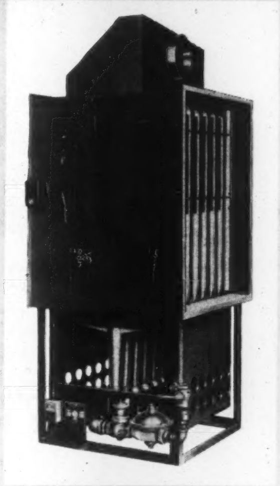
Wagner Electric Corporation

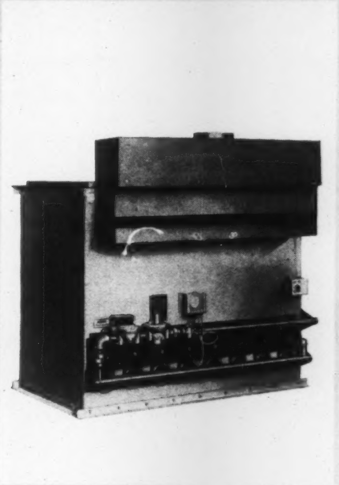
6370 Plymouth Ave., St. Louis 14, Missouri.

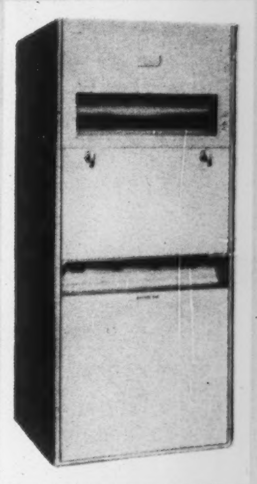
SERVING 2 GREAT GROWTH INDUSTRIES . . . *ELECTRICAL . . . AUTOMOTIVE*

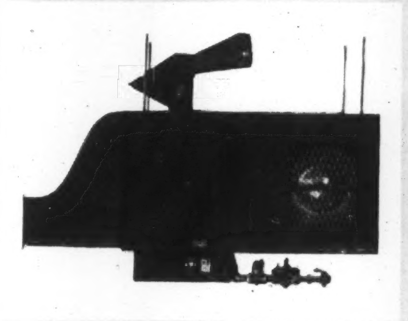
HAYES STAINLESS STEEL HEAT EXCHANGERS


SED-E


SED-S


SED-VF


SEC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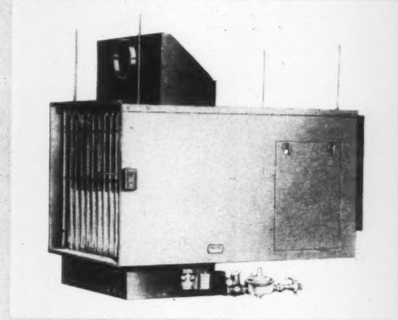
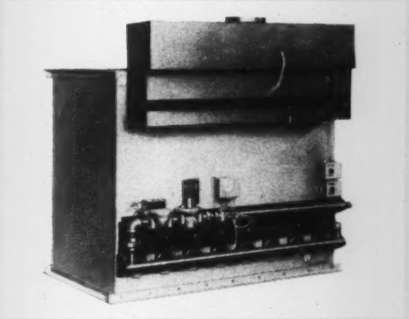

SES


SED-CF

SED-E — Non-corrosive type 321 stainless steel heat exchanger. Permits installation down-stream of cooling equipment, for continuous blower operation. Air through-put in either direction. 45,000 to 675,000 Btu input.

SED-S — Same as SED-E except controls are at the side. Either SED-E or SED-S is available in sizes from 45,000 to 675,000 Btu input in increments of 45,000 Btu.

SED-VF — Tested and approved as a duct furnace; type 321 stainless steel. Re-circulated or fresh air enters through bottom, sides, or back. Built-in air bypass, vent in front. 7 sizes from 70,000 to 280,000 Btu input.

SEC — Forced air furnace. Stainless steel heat exchanger sections seam and arc welded. One piece cast iron burners with drilled ports. Oversize double inlet blower. 7 sizes — 70,000 to 245,000 Btu input. For zero clearance.

SEU — Suspended unit heater. Recirculates room air. Diffuser outlet with adjustable vertical and horizontal vanes. Double inlet forward curve blower. Continuous duty, variable pitch drives, raised port burners. 80,000 to 480,000 Btu input.

SES — Forced air, suspended furnace for installation in suspended duct system. Designed for sheet metal duct connection. Double inlet forward curved blower. Continuous duty variable pitch drives, raised port burners.

SED-CF — Tested and approved as a duct furnace for counter-flow. Recirculating fresh air thru the top. Has a built in by-pass. Sizes from 70,000 to 280,000 Btu input.

—REPRESENTATIVES EVERYWHERE—

ARKANSAS:
LITTLE ROCK: J. C. Lewis Company
CALIFORNIA:
SAN FRANCISCO: John Rhoads
SAN JOSE: Central Service Co., Inc.
VISALIA: Valesco, Inc.
COLORADO:
DENVER: McCombs Supply Co.
FLORIDA:
CLEARWATER: R. J. Clark Equipment Co.
GEORGIA:
ATLANTA: R. E. Holcome; Dealers Supply Co.
IDAHO:
BOISE: Mechanical Equipment Co.
IOWA:
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KANSAS:
WICHITA: O'Connor-Oklahoma Co.
MISSOURI:
KANSAS CITY: Smith Steam Specialty Co.
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PASSAIC: M. Blazer & Son
NEW MEXICO:
ALBUQUERQUE: Boyd Engineering Co.
OKLAHOMA:
OKLAHOMA CITY: O'Connor-Oklahoma Co.
TULSA: O'Connor-Oklahoma Co.
OREGON:
PORTLAND: Temp Control Corp.
TENNESSEE:
NASHVILLE: Rèube O. Emery
TEXAS:
AUSTIN: Deudecke Engineering Co.
EL PASO: Boyd Engineering Co.
LUBBOCK: Nunn Electric Co.
UTAH:
SALT LAKE CITY: F & D Distributors
VIRGINIA:
NEWPORT NEWS: Noland & Co.
WASHINGTON:
SPOKANE: Frederick Co.
CANADA:
EDMONTON, ALBERTA: Sinclair Heating Supplies, Ltd.

HAYES

FURNACES

outstanding for
commercial, industrial,
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HAYES FURNACE MFG. & SUPPLY CO.

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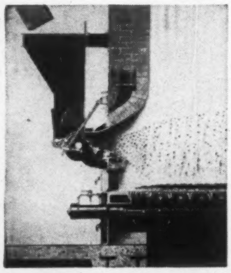
CHOOSE STOKER FIRING FOR ECONOMY AND SATISFACTION

Coal, Burned With a DETROIT STOKER Offers Many Advantages, Proven By Thousands of Installations

- **Assured Fuel Supply**
- **Provides Steam At Lowest Cost**
- **Dependable—Noted For High Availability**
- **Maintenance Expense Low**
- **Requires Little Power For Operation**

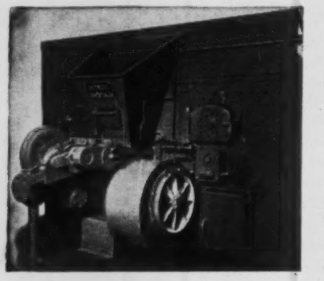
One of these Detroit Underfeed or Spreader Stokers will save you money—they are backed by over a half century of experience.

DETROIT ROTOSTOKER



Spreader stoker with OVERTHROW ROTORS that distribute the fuel uniformly in the furnace. Fine particles burned in suspension and coarse coal, burned on the grate. Four types of grates are available. RotoStokers burn successfully an extremely wide range of fuels without any special preparation. In combination with coal, RotoStokers also successfully burn wood and other refuse.

DETROIT UNISTOKER



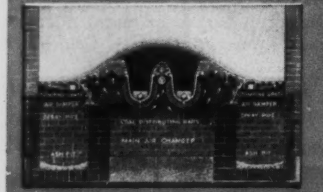
Plunger feed, side-cleaning stoker is available in various sizes for 125 to 250 horsepower boilers. Full-housed blower either motor or steam turbine driven, mounted at stoker front. Adjustable Feed provides for either manual or automatic coal feed control.

DETROIT ROTOSTOKER TYPE C-C

(Continuous Cleaning)

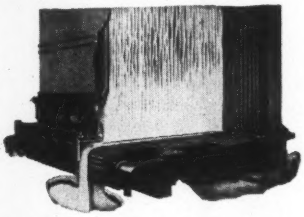
An important addition to the comprehensive "Detroit" line of spreader stokers. Readily applied to small and medium size steam generators approximately 5,000 to 75,000 pounds of steam per hour. The continuous cleaning grates automatically discharge the ash at the front for easy removal. No basement needed.

DETROIT DOUBLE RETORT STOKER



A multiple retort stoker having two retorts, with the side-cleaning feature requiring no basement. Now available with Detroit Adjustable Feed Coal Feed Control. For medium sized boilers.

DETROIT ROTOGRATE STOKER



Spreader stoker with FORWARD MOVING GRATES for medium and large boilers up to approximately 400,000 pounds of steam per hour. Screenings or crushed run-of-mine coal used without grinding or pulverizing. Successfully burns a wide range of fuels, including lower grades of Bituminous Coal and Lignites . . . with preheated air if desired. Higher burning rates for longer periods with low excess air and without slagging or clinkering difficulties. Combustible in ash is unusually low.

DETROIT LOSTOKER

Has Detroit Adjustable Feed (Coal Feed Control).

A complete firing unit. Compact—single retort—mechanically driven—plunger feed—side-cleaning design. Many sizes and capacities for various types of boilers. Simple, accessible, dependable. A great coal saver.

DETROIT STOKER COMPANY

Main Office & Works, Monroe, Michigan

District Offices or Representatives in Principal Cities

7433

INVESTIGATE DETROIT STOKERS — IT'S THE ROAD TO ECONOMY AND SATISFACTION

Quietest Direct Drive Blower Motor

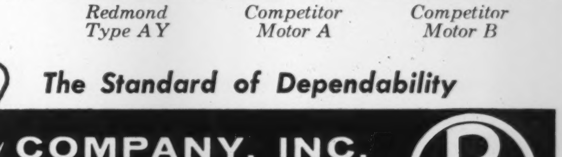
Place a mechanic's stethoscope on the end cap and you can easily hear the difference between the newly-designed Redmond Type AY and motors of conventional design. Try it on a Redmond 1/6 hp—the noise level is about that of a 1/35 hp motor of conventional design.

New Redmond Design Reduces Blower Vibration to One-Fifth that of units using Conventional Shaded-Pole Motors

Apply vibration tests and you will be quick to agree that here is the quietest direct-drive blower motor available. The AY Tri-Flux motor is designed and manufactured in every way to give years of trouble-free service and whisper-quiet operation. The positive oil system provides force-feed lubrication. Recirculating the oil assures maximum bearing life.

The graph shows vibration test results on the new Redmond design and two competitive motors. These tests were made with the best vibration testing equipment available. The solid black bar shows vibration on the motor end cap; the gray bar shows vibration on the blower housing. The graph is decibel readings on 120 cycles, since the 120 cycle frequency is the one that is the basic source of nearly all noise problems. Reduction of vibration is a logarithmic function—the reduction of vibration in the Redmond motor to 33 decibels reduces noise to only 1/5th that of conventional motors.

The new AY is ideal for a wide variety of applications requiring a whisper-quiet, economical, high-quality motor. Contact us at Owosso, Michigan, and we will have the Redmond sales engineer in your district call you at once.



The Standard of Dependability

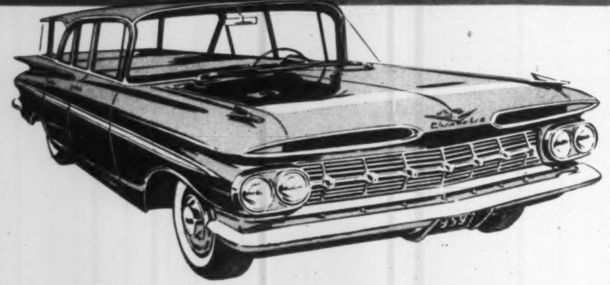
C C Redmond COMPANY, INC.
Subsidiary of CONTROLS COMPANY OF AMERICA
OWOSSO, MICHIGAN

REDMOND

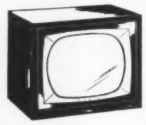
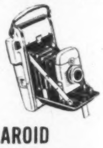
$20,000.00 IN PRIZES

FREON® "PARTNERS IN PROFIT" CONTEST

1ST PRIZE CHEVROLET STATION WAGON!



1959 Kingswood with air conditioning, air suspension, power steering, radio, heater, automatic transmission . . . fully equipped . . . $4,000

3-2ND PRIZES	5-3RD PRIZES	25-4TH PRIZES	250-5TH PRIZES
			
$1,000 UNITED STATES SAVINGS BONDS	RCA VICTOR "MARK 21" COLOR TV worth $495 each	POLAROID "HIGHLANDER" CAMERAS worth $72.75 each	WESTINGHOUSE TRANSISTOR PORTABLE RADIOS worth $39.95 each

—284 CHANCES TO WIN!

Hints to help you win

Your complete air conditioning and refrigeration wholesaler is *your* partner in profit. It will pay you to know and use his services, cultivate his friendship. Here are some of the benefits you get by dealing through your wholesaler.

- **Convenience** of buying at a one-stop supply source. Your wholesaler keeps ample, diversified stocks of high-quality air conditioning and refrigeration parts, equipment and supplies.
- **Immediate delivery** by your wholesaler permits you to give prompt, dependable service—imperative in emergencies.
- **Cost savings** because your wholesaler assumes expenses of inventory, warehousing, shipping, accounting and insurance.
- **Expert technical and engineering help** when you want it. Your wholesaler assists with design problems, figuring material costs; gives catalog service, prices and up-to-date information on new products.

"Freon" Check List

Look for this list of premium qualties of "Freon" refrigerants on your official entry blank. Check the one you consider most important.

☐ Time-tested—over 27 years in use—you can't go wrong with "Freon."
☐ Stable, pure and dry.
☐ Factory-sealed for purity.
☐ Nontoxic, nonflammable.
☐ Always available—anywhere in the world.
☐ Made by Du Pont—backed by years of technical and manufacturing leadership.

Insist on genuine "FREON"—Premium Quality Refrigerants . . . in the cylinders with the gold-hood caps.

DU PONT
Better Things for Better Living
. . . through Chemistry

"FREON" PRODUCTS DIVISION
E. I. DU PONT DE NEMOURS & CO. (INC.)
WILMINGTON 98, DELAWARE

*Freon and combinations of Freon and F followed by numerals are Du Pont's registered trademarks for its fluorinated hydrocarbon refrigerants.

CONTRACTORS, SERVICE MEN . . . You are eligible to win an air-conditioned 1959 Chevrolet station wagon if your company has bought Freon* refrigerants from a complete air conditioning and refrigeration wholesaler within the contest period (January 26, 1959—May 15, 1959). Read over the simple rules and hints to help you win. Then just tell us why *you* think it's good business to deal with a *complete air conditioning and refrigeration wholesaler*. It's easy! Enter often! You can get official entry blanks through your wholesaler. Ask him about the Freon* "Partners in Profit" Contest *today*.

SIMPLE CONTEST RULES:

1. Contest is open to all firms and their employees who are customers of complete air conditioning and refrigeration wholesalers providing that the customer firm purchases "Freon" refrigerants from a complete air conditioning and refrigeration wholesaler during the contest period (January 26, 1959 to May 15, 1959). Employees of E. I. du Pont de Nemours & Co., its subsidiaries, its agencies or its wholesale distributors of "Freon" refrigerants are not eligible to enter the contest.
2. Check the quality of "Freon" most important to you.
3. Complete this statement in 35 *additional* words or less: "I believe it is good business to deal through a complete air conditioning and refrigeration wholesaler because . . .

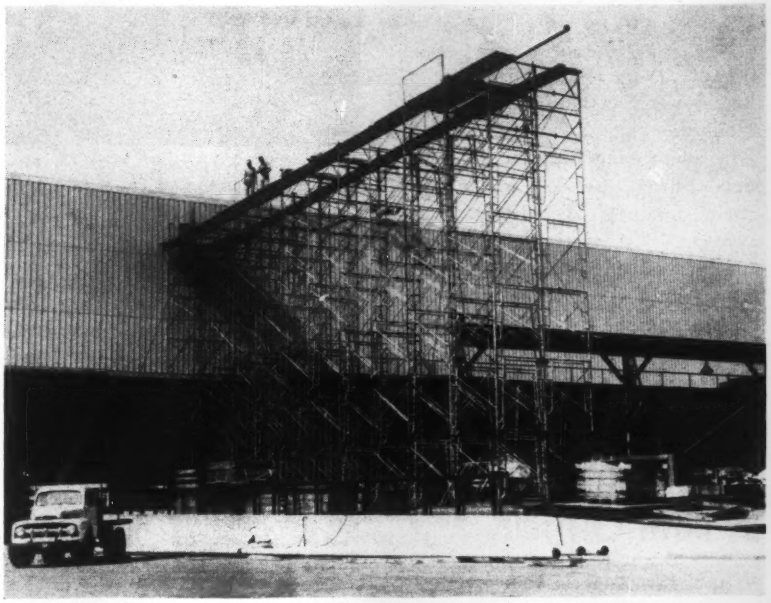
Mail your entry to: **FREON* CONTEST, Box 22F**
Mount Vernon 10, New York

Entries must be postmarked by May 15, 1959, and received by us at least within eight days of this date.

4. You may enter as often as you like. Your entry must be your own original work and must be submitted in your own name, on an official entry blank, obtainable through your complete air conditioning and refrigeration wholesaler.
5. Prizes awarded by Reuben H. Donnelley Corp., on the basis of their judgment regarding originality, sincerity and aptness of thought. Duplicate prizes awarded in case of tie.
6. Judges' decisions are final. All entries and ideas become the property of E. I. du Pont de Nemours & Co. (Inc.). None will be returned. Contest is subject to federal, state, and local regulations.
7. Winners will be notified about six weeks after close of contest.

See the big prizes on display at the ASHAE show, Philadelphia. Visit the "FREON" refrigerants booth and enter the contest!

You'll Want To Know . . .



HPAC Contractor Pushes Pipe Through Wall from Scaffold

THE INSTALLATION of an overhead 6 in. gas line in the Convair plant at Fort Worth, Texas, presented a problem to Rollins Gardner, local mechanical (heating, piping, and air conditioning) contractor. This gas pipe line had to be installed 41 ft above the plant floor and had to extend the full 2400 ft length of the building.

Since Convair's work inside the plant could not be interrupted, Mr. Gardner decided to push the pipe through the wall at one end as the sections were assembled outside.

A scaffold 80 ft long was erected outside the building at a height that would permit the pipe to be pushed through the wall directly on to roller hangers mounted inside the building on the steel trusses at a distance of 25 ft apart.

Pipe delivered in 40 ft lengths was welded into 80 ft lengths on the ground and painted. A motor crane then lifted the 80 ft pieces onto the scaffold where the sections of pipe were placed on rollers, welded together, and pushed into the plant. A cone head was welded on the leading end of the pipe to make it pass smoothly on to the rollers since the pipe deflected about 2 in. in the 25 ft span between rollers.

The installation was completed in six continuous shifts without any interruption of work inside the plant. The pipe was pulled through the wall on the rollers by means of a truck-mounted power winch with block and tackle to achieve the necessary capacity as the load increased with the greater length of the pipe.

Wash Big Missiles With Clean Air During Tests

THE AIR FORCE'S huge Titan missiles are washed inside and out with carefully conditioned air as they are tested and checked out in the vertical launching position at the new testing facilities near Denver, Colo. These new facilities are operated by the Martin Co. where the elaborate mechanism undergoes all conceivable tests short of actual flight.

Precise atmospheric control for the air is provided during these tests to offset the heat generated by the electronic, electrical, and hydraulic devices which operate it internally, according to the Carrier Corp. Electrical brains generate much more heat than humans and at the same time require more precise conditions to operate accurately.

Although test details are a military secret, the Titan is subjected to more strains and pressures than will be encountered in flight. Once the data is secured it is fed to an elaborate array of air conditioned analog and digital computers for analysis.

Not only in the final stages but also in the creative phase, air conditioning provides a big assist. The Martin-Denver engineering building is similarly equipped for careful control of atmosphere.

As one official explained it: "Our people are engaged in work at a high scientific level involving many critical unknowns and abstractions. We want to regulate their environment to the point where they are not even aware of it. Otherwise they might be diverted from their work even if they were not actually uncomfortable."

The Titan has been described by the Air Force as the most advanced in design of its two ICBM's. It is a two-stage rocket with a range of more than 5500 nautical miles at speeds over 16,500 mph near those required for satellite launching.

Radio-Controlled Street Lights Have Forced Air Cooling

SHOPPERS on Chicago's State St. are now doing their buying on the most brilliantly lighted street in the world. The fluorescent system is four times brighter than the one formerly in operation and twice as bright as that of any other existing thoroughfare.

A total of 70 lights, five on each side of the street in each block, have been installed between Lake and Van Buren Streets. Each pole has four arms supporting fluorescent lamps. Electricity use of the new system is 30 percent greater than the former one.

This is the first major lighting system to utilize radio for its controls. A central transmitter at Carson Pirie Scott & Co. sends out signals to receivers in the base of each pole. The luminaires contain forced air cooling systems which will keep them at the temperature allowing the maximum output of light. Each pole contains an electric heating system to keep radio controls and other wires dry and a drainage system for the three flower pots that hang from each standard.

In announcing the plan, J. Chalmers O'Brien, president of the State Street Lighting Association, commented, "We received continuous and invaluable assistance from Commonwealth Edison which played so big a part in the creation of the original system now replaced."

You'll Want To Know

Anti-Smog Rule Limits Sulfur in Fuel Oil

A NEW Los Angeles anti-smog rule, forbids the burning of fuel oil containing more than 0.5 percent sulfur for industrial and other large building applications. This will probably mean a shift to natural gas from the current daily average consumption of 50,000 bbl of fuel oil. It is estimated that this new rule will rid the air of a daily 350 tons of sulfur dioxide and some 65 tons of other pollutants.

The Oil Heat Institute of America has issued a statement regarding this new limitation in the Los Angeles area by assuring that the type of fuel oil which has been banned in Los Angeles bears no relation to No. 2 to No. 3 fuel oil. The highest sulfur content in these types of fuel oil was found by the 1958 Mineral Industry Survey of Fuel Oils to be 0.3 percent.

The National Conference on Air Pollution held in Washington, D. C. on November 18-20 stressed the need for closer watch on this subject. A brief report of what took place is on page 161 of this issue. A more complete report is being prepared for publication in an early issue.

Electronic System Controls Solar Heat Pump Job

A NEW electronic control system for one of the first buildings heated and air conditioned by solar energy has been installed at the University of Arizona's new Solar Energy Research Station at Tucson, according to Minneapolis-Honeywell Regulator Co.

A collector plate located on the roof is used to collect solar heat in winter and to dissipate heat at night in the summer. The heat storage system consists of an upper and lower tank filled with water, with standby heating and cooling provided through use of a heat pump located between the two tanks.

Major components of the custom built control system include two control panels (one mounted in the lobby of the four room office building and the other in the equipment room), three electronic amplifiers used as primary relays, several limit controls to initiate various switching operations and a thermostatic controlled 3 way valve for modulating room temperature.

The heating and cooling system used at the Tucson facility is believed to be practical in many parts of the U.S.

Ohio State's Welding Course Accredited by ECPD

OHIO STATE UNIVERSITY's curriculum in welding engineering has been accredited by the Engineers Council for Professional Development, according to word received by President Novice G. Fawcett.

The accreditation, the first in the U.S., was granted in November. The ECPD is a joint organization of engineering professional societies and engineering educators. It is concerned with advancing the status of the engineer and the profession.

Prof. Roy B. McCauley, chairman of the department, said that with the accreditation, the field of welding engineering is moving closer to national acceptance as a professional engineering group.

Since 1932 the ECPD has been the single coordinating agency concerned with the accreditation of engineering curricula. Upon request an ECPD committee visits a university campus and examines records, staff policies, and capabilities to determine whether accreditation should be granted.

Welding engineering was added to the professional engineer group by the State of Ohio in 1950. Professor McCauley pointed out that for the past few years Ohio has led all states in welding.

Education in welding at Ohio State began in 1893 with the introduction of welding of steel by forging. In 1919 gas welding and cutting were introduced. In 1925, when the department of industrial engineering was established, the laboratories were transferred to the College of Engineering with new emphasis on manufacturing processes.

The welding curriculum was advanced to an option degree in the department of industrial engineering in 1938 and in October, 1947, a curriculum for the degree of bachelor of welding engineering was approved by the university, and the new department was established.

Author of the first curriculum in the new department was Prof. Robert S. Green, who was named chairman. Upon Professor Green's promotion to the post of executive director of the Engineering Experiment Station in 1954, Professor McCauley was named department chairman. Professor Green has served as consultant for the National Certified Pipe Welding Bureau for some time.

The A. F. Davis Welding Library is located in the same building and contains some 7000 volumes on welding and related fields. It also contains a classification system for welding patents. There are currently nearly 15,000 U.S. and foreign patents in an easy-to-reach file system which is available to faculty, students, and industry. Non-destructive testing literature is also included in a similar welding classification system.

The department has taken an active role in research in welding engineering. An important area of study is in weldability and welding metallurgy. Basic studies and development of welding procedures have been accomplished in aluminum piping, magnesium alloys, titanium alloys, stainless steels, and highly hardenable alloy steels.

The nature of weld bonds, the state of stress in weld joint development, and the nature of the welding arc, are currently under study. Professor McCauley and William L. Green, instructor in the department, have begun a series of studies on the nature of discontinuities in welded materials and the effect of these discontinuities on weld serviceability.

Nondestructive testing investigations are centered around the areas of electronic fluoroscopy, solid-state x-ray detectors, isotope techniques, and ultrasonic development.

Coal Fired Boiler Specifications Available from BCI

THREE BOILER ROOM PLANS are presented as typical applications in the new Bituminous Coal Institute *Guide Specification GS-3* covering the fully automatic, coal-fired, package steam plant developed by Bituminous Coal Research, Inc., 802 Southern Building, Washington 5, D. C.

Plan A depicts a low pressure steam heating plant having a net load of 12,500 sq ft of steam EDR and consisting of two 100 hp steam generators with a combined capacity of 28,000 sq ft of steam EDR. The plant includes a truck-supplied, below grade bin for coal storage.

Plan B constitutes a modern, low-temperature hot water heating plant having a design load of 16,700,000 Btu per hr. The three 200 hp hot water generators, which have a combined capacity of 20.1 million Btu per hr, are designed to operate at 100 psi. The coal is stored in a room type bin at grade level, and the coal and ash are automatically conveyed.

Plan C is an example of a modern, high-pressure steam plant having a load of 20,000 lb of steam per hr and designed to operate at 125 psi. Three 300 hp high-pressure steam generators, having a combined capacity of 30,000 lb of steam per hr, are automatically fueled from a rail supplied coal storage silo.

The range of sizes in which the units are available makes these Guide Specifications applicable to plant designs using one 71.6 hp unit to a

You'll Want To Know

multiple of 300 hp units for either steam or hot water. The various schemes of plant layout, conveyor arrangements, bin types, control applications, etc., can be interchanged to meet specific needs.

Big Panel System for California Building

THE $45 million Kaiser Center, Oakland, includes the largest office building west of the Rockies. A radiant panel ceiling heating and cooling system serving the office building is the largest single installation of its kind in the world, according to Dudley Deane and Associates, consulting engineers, who designed the systems.

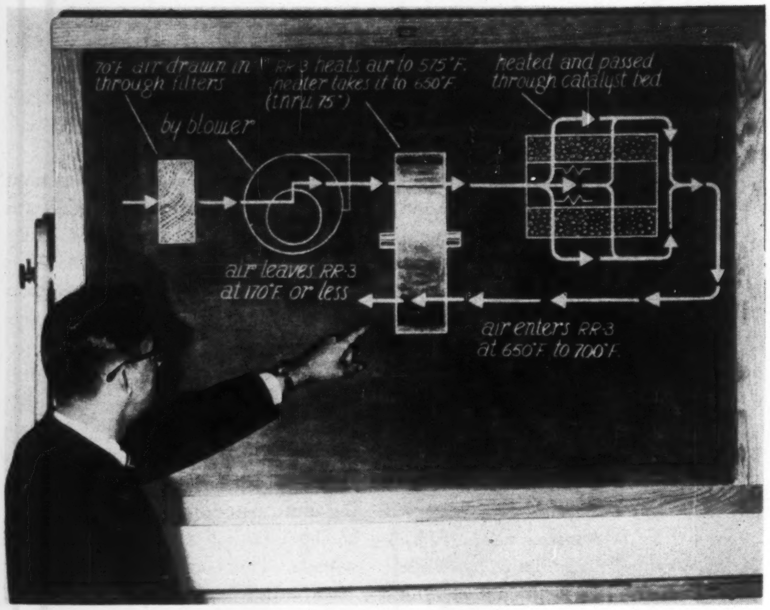
The systems consist of perforated acoustical tiles of aluminum, behind which a sound absorbing blanket and pipes carrying warm and chilled water will be concealed. The ceiling will provide an even temperature by radiation throughout the building regardless of load conditions.

The refrigeration capacity is 2500 tons, and 5000 gpm of 45 F chilled water is circulated throughout the system. Condenser water at the rate of 7500 gpm is circulated through a two-cell induced draft cooling tower.

Three boilers produce 12,500 lb of steam per hr and this steam heats water on every fourth floor by means of steam-to-water heat exchangers. The temperature of the heated water is 110 F which is circulated in the ceiling panel coils.

The 28-story structure, headquarters office building for Kaiser Aluminum and Chemical Co., was designed by Welton Becket and Associates, architects and engineers.

You'll Want To Know


70°F air drawn in through filters
by blower
RR-3 heats air to 575°F. heater takes it to 650°F. (thru 75°)
heated and passed through catalyst bed
air leaves RR-3 at 170°F or less
air enters RR-3 at 650°F to 700°F

Gases Oxidized by Catalyst To Purify Submarine's Air

PURIFYING air in atomic powered submarines is no light problem since the air must be recirculated for many days at a time. A new method has recently been developed and is in use aboard the U.S.S. Nautilus and the U.S.S. Skate, according to the Air Preheater Corp.

Carbon monoxide and hydrogen are removed from the submarine's atmosphere by heating the air to high temperatures and passing it through a catalyst which oxidizes the gases to carbon dioxide and water vapor.

Before entering the catalytic burner, the air passes through the rotary heat exchanger which increases the air temperature from 70 to about 575 F. An electric heater between the exchanger and the catalyst bed increases the temperature about 75 F so that the air temperature is about 650 F.

Before the clean air is discharged into the submarine, the heated air passes through a rotary heat exchanger where the temperature is reduced to about 170 F. Additional cooling equipment then reduces the air temperature further to about 70 F so that it can then be introduced into the submarine.

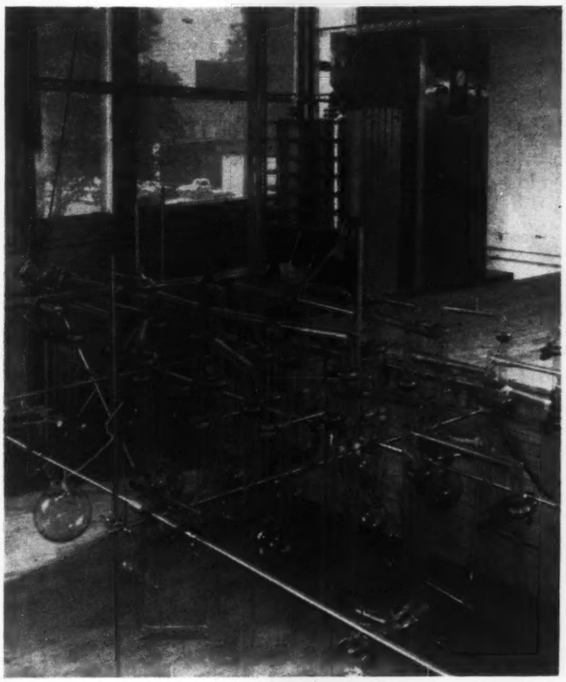
Gear Urban Planning To 2000 A. D.

COMMUNITY PLANNING should be geared to the year 2000, William A. McDonnell, president of the Chamber of Commerce of the United States, said recently, addressing the National Conference on Metropolitan Growth in Washington, D. C.

"And even then — if we aren't careful with our blueprints — our plans may prove to be short of needs before the 21st century," Mr. McDonnell said.

"On our part," he said, "we can plan the rebuilding of our empire in a coordinated sort of way. In the process, we will witness sweeping changes in the living patterns of millions of our people. We are on the verge of another one of those great transitional periods which have so indelibly stamped the American record — and always for the ultimate good."

Glass Piping System Aids Smoking Research



LATEST AND BIGGEST of the cigarette smoking robots used in cancer-tracking experiments was installed recently in Buffalo's Roswell Park Memorial Institute. Puffing 600 cigarettes every 10 minutes—100 cartons a day—the machine's rotating drum takes 10 drags, ejects butts, and begins smoking new ones blown into place by compressed air. The smoke inhaled by the machine is broken down in refrigerated condensers to produce the tar.

Piping for the smoke from the automatic smoking machine, as well as the collecting piping in the machine is fabricated from glass pipe and fittings. Pipe and fittings 1 in. in diameter convey the smoke from the exit of the machine to the condensing cabinet using flange connections with teflon gaskets. Teflon is also used for smoke pickup from the perforated drum and teflon liners are used in the cigarette holders.

A glass pipe manifold, fused to 1 in. glass pipe to connect with the feed line, distributes the smoke to a maximum of five parallel lines of glass condensers of bulbous and V-shaped tubes connected by ball and socket joints and suitable connecting tubes. The air bath is maintained at 68 F by refrigeration and is thermostatically controlled.

The condensing lines are connected by another manifold of glass piping and thence through an air filter to a rotary vacuum pump which automatically maintains a suction pressure of $1\frac{1}{2}$ to 2 in. of water gage at the machine.

To Promote Hydronic Heat for Big Buildings

THE Better Heating-Cooling Council recently announced its plans for 1959 at its third annual meeting and also reported progress that has been made in promoting hydronic systems for all types of buildings.

First of the new programs to be started in 1959 will promote hot water and steam heating and cooling for commercial, institutional, and industrial buildings. A second new program announced is aimed at helping wholesalers increase their hydronics business. This plan calls for the wholesaler to make use of a full-time specialist in contacting heating, piping, and air conditioning contractors.

M. E. Mitchell of Weil-McLain Co. was elected president of the Better Heating-Cooling Council for 1958-59 at the recent annual meeting. M. J. Murray of John J. Nesbitt, Inc., is a new member of the board of directors.

Plan Technical Writing Institute

GREATER CONCENTRATION on writing problems and more group participation will be features of the seventh annual Technical Writers' Institute, to be conducted at Rensselaer Polytechnic Institute, Troy, N. Y., June 8-12.

Attending groups are divided according to interest and specialization. The 1959 session will feature instruction on report writing, manual and instruction book writing, technical sales writing, article writing, government writing, supervision of company magazines, and illustration.

For more information, write to Jay R. Gould, Director, Technical Writers' Institute, Rensselaer Polytechnic Institute, Troy, N. Y.

You'll Want To Know

Discuss Electric Heating, SBI Merger at IBR Meeting

EFFECTS of electric heating competition on the hydronics industry were examined and evaluated last month by manufacturers attending the semi-annual meeting of the Institute of Boiler and Radiator Manufacturers.

A panel discussion at the group's meeting, held at the Seaview country club, Absecon, N. J., showed that the industry definitely considers electric heat a factor to be reckoned with in the future.

Members attending the three day meeting were told that they should not underestimate the competition and that superior salesmanship was needed to counter the claims that have been made for electric heating.

The discussion was stimulated by the recent incidence of electric heating promotions in several areas. The majority of electric installations in the past have been sold in the low cost power areas, such as the TVA area and the Northwest states. However, utility company promotions of electric heating have been launched recently in Chicago, Detroit, and elsewhere.

Following a report on institute activities by Robert E. Ferry, IBR general manager, Virgil A. Good, of the Burnham Corp., IBR chairman, opened discussion on a proposed merger of IBR and the Steel Boiler Institute.

He revealed that merger meetings had been held by a joint committee early this year and that progress is being made. After an open discussion in which SBI members participated, it was concluded that there remained a number of areas to be explored. However, approval of members of both groups was indicated, and it was decided to continue the committee work to effect a merger.

You'll Want To Know

L. T. Avery Joins Editor Board

IT IS with pleasure that it is announced that Lester T. Avery is appointed as a member of HPAC's Board of Consulting and Contributing Editors.

Mr. Avery is president of Avery Engineering Co. which is engaged in air conditioning and refrigeration contracting with headquarters in Cleveland, Ohio. He has served as president since 1929 when the organization was founded. He is a member of the American Society of Heating and Air-Conditioning Engineers, American Society of Refrigerating Engineers, and the Cleveland Engineering Society. He served as president of ASHAE in 1950.

Mr. Avery has written several articles for publication in Heating, Piping & Air Conditioning and he will be contributing additional articles for future publication based upon his experiences in the installation of refrigeration equipment used in connection with air conditioning systems for many types of large installations.

H. J. Rose Honored for Coal Research

DR. H. J. ROSE, vice president and consultant for Bituminous Coal Research, Inc., has been awarded the 1958 Worcester Reed Warner Medal for outstanding contributions to engineering literature.

Presentation of the medal was made December 1, at the annual meeting of the American Society of Mechanical Engineers in New York City, in recognition of Dr. Rose's "valuable work done in investigating and reporting the characteristics of coals and the use and control of combustion byproducts from various process applications."

Prior to joining BCR in 1944 as vice president and director of research, Dr. Rose was vice president in charge of research of Anthracite Industries, Inc., and before that, he was assistant director of research of Koppers Co. During the time he held these positions, he was also associated with Mellon Institute on fuel research.

Leader's Qualities Must Be Cultivated

WHAT are the qualities of a leader? What makes one man stand head and shoulders above the crowd, while another is content to follow?

The qualities of leadership must be cultivated, according to D. C. Power, president of General Telephone System. The seven points that seem to emerge whenever the subject comes up are:

1) He learns from his mistakes

2) He knows how to express himself

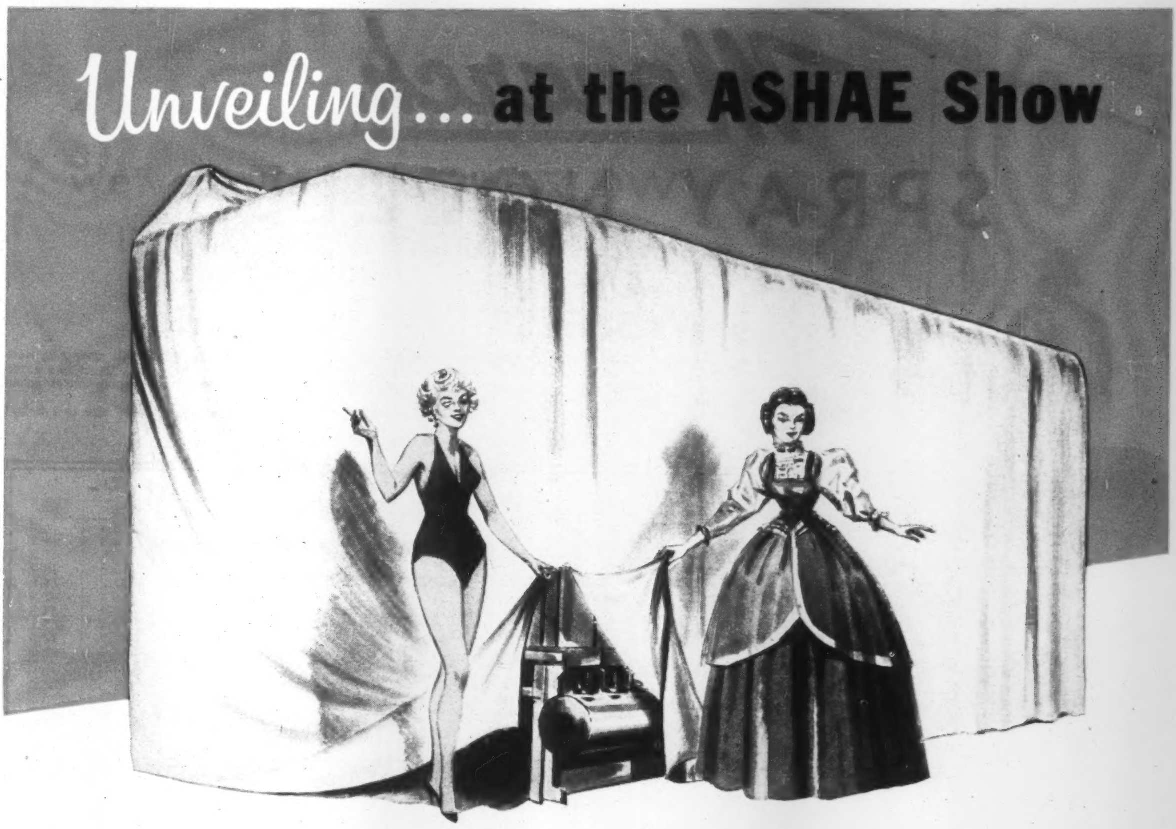
3) He seeks to rise higher and higher

4) He sets specific objectives to guide him

5) He calls on people with specialized skills

6) He keeps going, even when everyone jeers

7) He gets that extra bit of effort out of himself.


Unveiling... at the ASHAE Show

a completely new, big cast iron water tube boiler

the H. B. SMITH "MILLS 640"

Oldest manufacturer of cast iron boilers for heating announces the newest achievement – the Mills 640 Water Tube Boiler for automatic oil or gas firing. All of the improvements and refinements in engineering, metallurgy, coring, casting and precision machining combine to develop a new high efficiency record in the famous Mills Flue Design – improvements never before combined in a single unit.

The 640 develops output far beyond the capacity of any cast iron boiler of comparable size. With normal draft it operates at top efficiency with lower chimney heights than *any* other boiler of its size. Ratings range from 100 to 200 horsepower.

1074
H.B.SMITH BOILERS

The No. 640 will be unveiled in the H. B. Smith booth, No. 1074, at the ASHAE Show, Convention Hall, Philadelphia, January 26-29, 1959. Plan to be there and take a personally-conducted tour through this boiler, which ushers in a new era in boiler performance.

H. B. Smith CAST IRON BOILERS

The H. B. Smith Company, Inc., Westfield, Massachusetts • Est. 1853

Monarch

SPRAY NOZZLES

for AIR WASHERS . . . COOLING TOWERS

These are "non-clogging" nozzles with a single large tangential lead hole to the swirl chamber that will never clog from any impurities small enough to pass through the orifice. Swirl chamber is conical on both ends and pivots liquid like a top to produce an exceptionally fine, evenly distributed, balanced spray of about 80° included angle. Wider spray angles up to 130° can be furnished to order.

Standard material Brass. Also available in Stainless Steel and Monel. Pipe size from 1/8" to 1". 1/4" size is 1-5/16" long and made from 5/8" square stock.

CAPACITIES: GALLONS PER HOUR

Pipe Size and Fig. No.	Orifice	Lead	OPERATING PRESSURE: LBS. PER SQUARE INCH							
			5	10	20	30	40	60	80	100
1/8" Fig. 629	69	69			2.7	3.3	3.8	4.7	5.4	6.0
	61	61			4.2	5.1	5.9	7.2	8.3	9.2
	61	53	2.7	3.7	5.3	6.5	7.5	9.2	10.5	11.8
	53	53	4.0	5.7	8.2	10.0	11.5	14.1	16.3	18.2
	49	49	5.6	7.9	11.1	13.6	15.7	19.3	22.2	24.8
1/4" Fig. 629 or Fig. 631	3/32	3/32	9.6	13.5	19.2	23.4	27.0	33.0	38.4	42.9
	1/8	3/32	12.2	17.3	24.4	29.9	34.6	42.4	49.0	54.9
	1/8	7/64	14.6	20.6	29.1	35.7	41.0	50.4	58.4	65.1
	1/8	1/8	15.9	22.5	31.9	39.2	45.1	55.2	63.7	71.5
	11/64	1/8	21.7	30.6	43.2	53.0	61.1	75.0	86.4	98.0
1/4" Fig. 629 or Fig. 631	3/16	5/32	30.5	43.2	61.1	74.9	86.4	107	122	136
	7/32	3/16	45.1	63.8	90.5	110	128	156	180	202
	13/64	13/64	54.7	77.8	108	134	155	191	217	246
	7/32	7/32	59.8	84.5	120	146	169	207	240	267

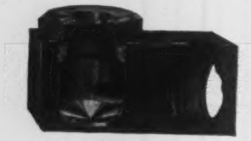


Fig. 631

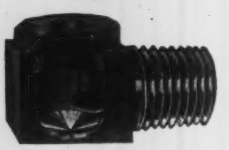


Fig. 629

HUMIDIFIERS . . . . . . AIR CONDITIONERS

The H-261 and F-80 brass nozzles produce the finest, softest, fog-like spray possible with low direct pressure only. Popular sizes are nozzle 3.00 and 5.00 tested either 80° or 120° at 25 pounds.

All Brass construction with 120 mesh Monel screen strainers and 1/8" or 1/4" female or 1/4" male pipe connection in the F-80 and 1/4" male only in the H-261. The H-261 is 1 3/8" overall and the F-80, 1 7/8".

CAPACITIES: GALLONS PER HOUR

Nozzle No.	OPERATING PRESSURE: LBS. PER SQUARE INCH							
	10	25	30	35	40	60	80	100
1.35					.57	.70	.81	.90
1.65					.75	.92	1.06	1.18
2.00				.87	.94	1.14	1.32	1.49
2.50			.98	1.01	1.13	1.39	1.60	1.80
3.00		1.00	1.10	1.18	1.27	1.55	1.79	2.00
3.50		1.30	1.41	1.54	1.64	2.01	2.32	2.60
4.00		1.50	1.64	1.78	1.90	2.33	2.69	3.00
4.50		1.90	2.09	2.25	2.40	2.94	3.40	3.80
5.00		2.20	2.41	2.60	2.78	3.41	3.94	4.40
5.50		2.40	2.63	2.84	3.04	3.72	4.30	4.80
6.00		2.60	2.85	3.08	3.28	4.03	4.66	5.30
7.00		3.00	3.30	3.55	3.80	4.65	5.37	6.00
7.50	2.02	3.20	3.50	3.78	4.05	4.96	5.74	6.40
8.30	2.27	3.60	3.95	4.27	4.55	5.58	6.45	7.20

Fig. H-261

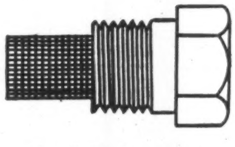
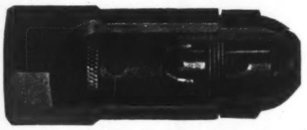


Fig. F-80 Brass



OIL BURNERS

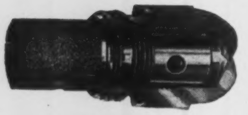


Fig. F-80
Stainless Steel

Monarch Stainless Steel Nozzles for high pressure gun-type oil burners are the Industry yardstick for nozzle performance. Each nozzle individually tested for capacity, spray angle and uniformity of spray on No. 2 fuel oil weighing 7.16 pounds per gallon at 74°F. and 34 S. S. U. viscosity at 100°F. Standard spray angles are 30°, 45°, 60°, 70°, 80° and 90° in small sizes.

Standard capacity sizes (GPH at 100 psi.): .40, .50, .60, .75, .85, 1.00, 1.10, 1.20, 1.25, 1.35, 1.50, 1.65, 1.75, 2.00, 2.25, 2.50, 3.00, 3.50, 4.00, 4.50, 5.00, 5.50, 6.00, 6.50, 7.00, 7.50, 8.30, 9.50, 10.50, 12.00, 13.80, 15.30, 17.50, 19.50, 21.50, 24.00, 28.00, 30.00, to 60.0 in 5.00 GPH steps and 60.0 to 100.0 in 10.00 GPH steps.

Write for complete Catalog I and prices.

MONARCH MANUFACTURING WORKS, INC.

2523 E. ONTARIO ST.
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CANADIAN AGENTS (EXCEPT B.C.): E. S. GALLAGHER SALES LTD., TORONTO 15
AGENTS IN ALL OF EUROPE, AUSTRALIA, AND NEW ZEALAND

"On job after job we've found COPPER DWV lines cost less to install, need less room and are easier handled,"

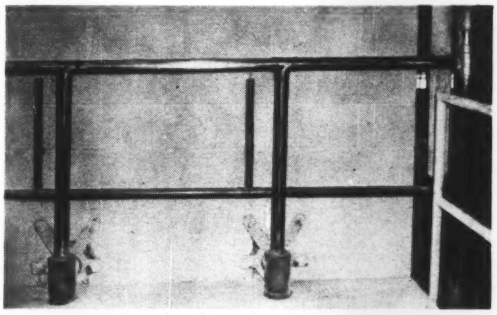
Says Robert K. Warfel, President
WARFEL PLUMBING & HEATING COMPANY
Elkhart, Indiana

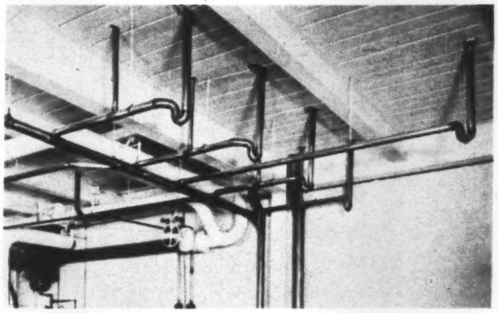
"When you consider all the advantages of Copper DWV lines you don't have to be a mathematician to figure the savings that are realized. There's no laborious, time-consuming thread cutting, they are easier to handle, need fewer hangers, take up less space and we can prefabricate many of the assemblies right in the shop. No wonder Copper DWV lines cost less than rustable materials to install. And, with soldering or brazing, fast, tight joints are always possible.

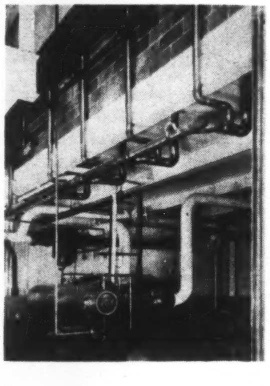
"With the wall hung type of closet becoming increasingly popular for home use we found Copper DWV joined with easy-to-solder wrought fittings an ideal combination. The top photograph at left shows a typical hook-up in multiple unit installation."

Contractors and owners, too, have found that Copper DWV lines will not rust, that their gun-barrel smooth interiors make clogging virtually impossible, and that, once the installation is made call-backs are a thing of the past.

Make your next job 100% copper. Keep tabs on costs and prove for yourself that it costs less to install copper, whether it be DWV lines, heating, air conditioning, processing or hot and cold water lines. See your Revere Distributor who is prepared to fill all your needs.







(Top)
IN THIS LARGE VENT installation of wall-hung gang closets, note what a neat joining job can be done with Copper DWV lines and precision, solder-type fittings.

(Center)
11,548 lbs. of Revere Copper Water Tube and Copper DWV lines were used in this plant, in sizes ranging from ½" Type L to 6" DWV. Uses covered roof and sanitary drainage, water and air piping.

(Bottom)
THERE'S NO TROUBLE running Revere Copper vent lines, even when they're as close as this. Soldering or brazing of copper tube can be done with ease and speed in the tightest corners.

REVERE COPPER AND BRASS INCORPORATED

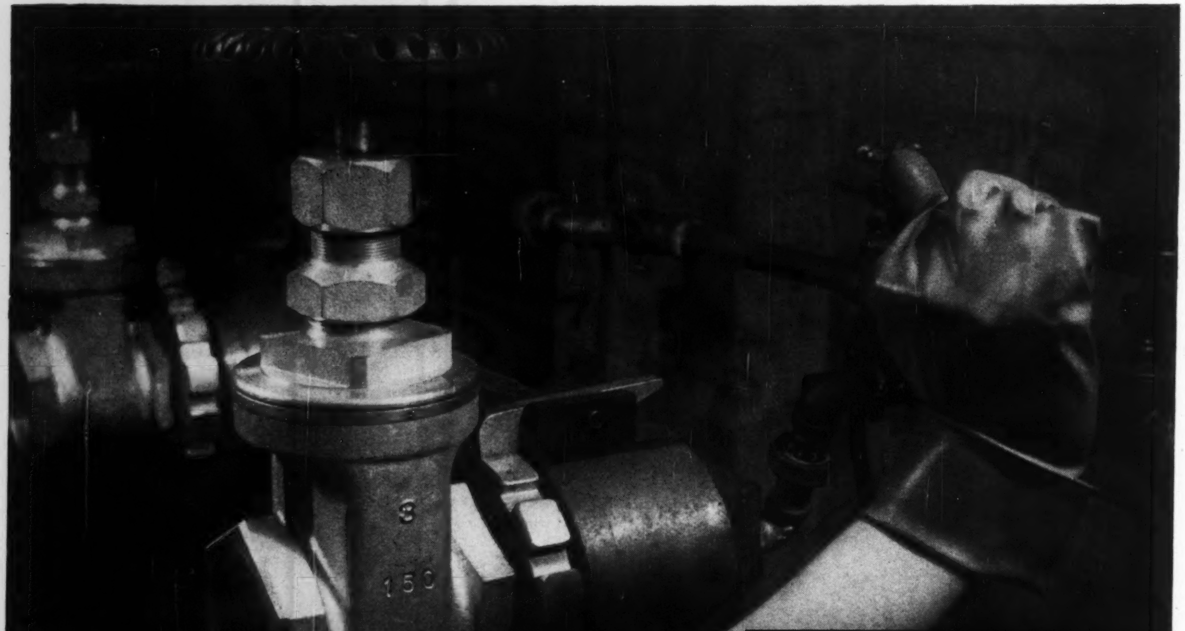
Founded by Paul Revere in 1801
230 Park Avenue, New York 17, N. Y.

Mills: Rome, N.Y.; Baltimore, Md.; Chicago, Clinton and Joliet, Ill.; Detroit, Mich.; Los Angeles and Riverside, Calif.; New Bedford, Mass.; Brooklyn, N.Y.; Newport, Ark.; Ft. Calhoun, Neb. Sales Offices in Principal Cities, Distributors Everywhere.

COPPER ★ BRASS ★ 1801 ★ REVERE ★ ALUMINUM

MADE IN U.S.A. TO THE STANDARDS OF AMERICAN INDUSTRY

PREMIUM QUALITY—MODERATELY PRICED

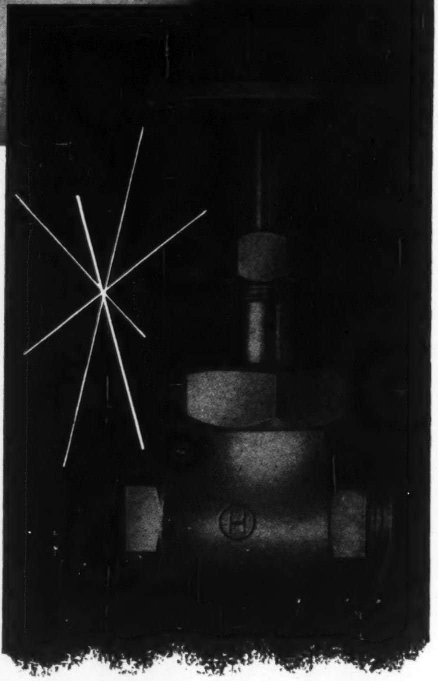


Each valve individually tested

Before it leaves the factory, each Hammond Bronze Valve is individually pressure-tested for perfect closure. For example the Number 619 gate valve above is rated for 150 lbs. Before passing final inspection it must prove drop-tight under an individual hydrostatic test at 300 lbs., as shown. This individual testing is typical of the many rigorous checks and inspections that verify Hammond quality—quality second to none in the valve industry.

Hammond manufactures bronze valves exclusively—and rigorously controls every step from the melting of the virgin ingot to final individual testing. High volume production, in a modern, "automation" factory, permits economies which are reflected in moderate prices for valves of outstanding quality.

Write today for your copy of our new catalog No. 158 describing Hammond's complete line. Address Hammond Valve Corporation, Hammond, Indiana.



Hammond Number 413 globe valve is rated for steam service up to 150 lbs., 300 lbs. W.O.G. Has slip-on composition disc, union bonnet, stuffing box, gland follower. Complies with Federal spec WW-V-51A, Type 1, Class B.

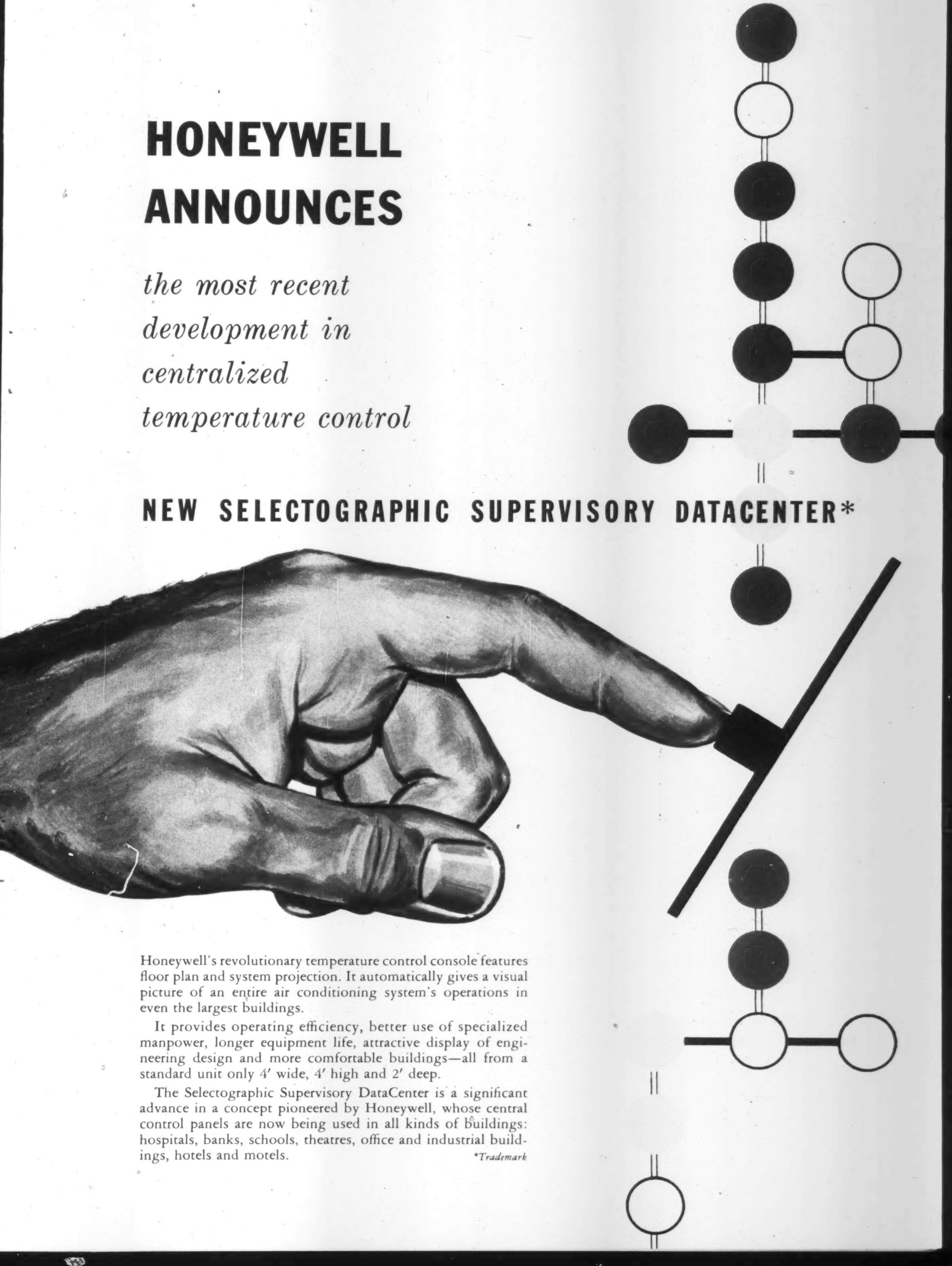
HAMMOND ***BRITE-KOTE***® **BRONZE VALVES**

See us at Booth C-54, Heating & Air Conditioning Exposition, Philadelphia, January 26 to 29.

HONEYWELL ANNOUNCES

the most recent development in centralized temperature control

NEW SELECTOGRAPHIC SUPERVISORY DATACENTER*

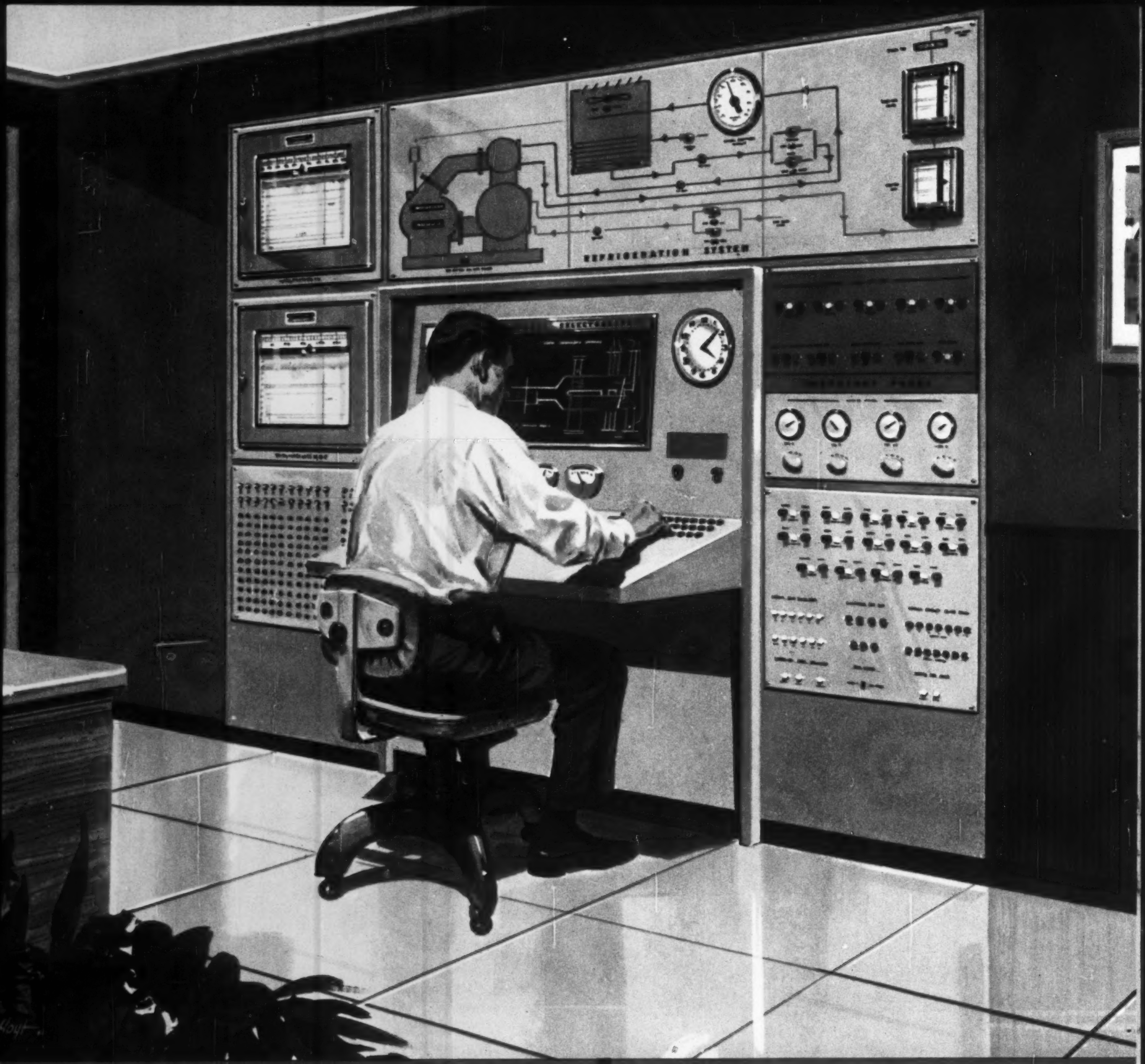


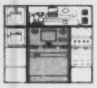
Honeywell's revolutionary temperature control console features floor plan and system projection. It automatically gives a visual picture of an entire air conditioning system's operations in even the largest buildings.

It provides operating efficiency, better use of specialized manpower, longer equipment life, attractive display of engineering design and more comfortable buildings—all from a standard unit only 4′ wide, 4′ high and 2′ deep.

The Selectographic Supervisory DataCenter is a significant advance in a concept pioneered by Honeywell, whose central control panels are now being used in all kinds of buildings: hospitals, banks, schools, theatres, office and industrial buildings, hotels and motels.

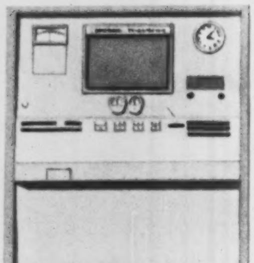
**Trademark*

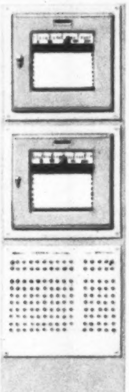


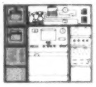


CENTRAL SELECTOGRAPHIC PANEL

Replaces system diagrams and floor plans that take up much of the area on present panels. The desired diagram or floor plan is flashed on one screen. At the same time console controls—single set of push buttons—are automatically switched to control the system in view. They provide precision temperature indication, logging and adjustment plus start and stop control of fans and positioning of dampers.







TEMPERATURE, HUMIDITY RECORDER

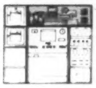
These recorders provide exact printed records of temperatures and humidity throughout the system. These records may be studied to determine over-all system efficiency. Through a plug and jack system one recorder can record up to 20 different measurements on a single chart. Points can be selected so that only those of interest at the time need be recorded.

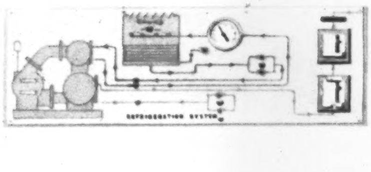
NEW SELECTOGRAPHIC SUPERVISORY DATACENTER

MODULAR CONSTRUCTION, FLOOR PLAN AND SYSTEM PROJECTION MAKE CENTRALIZED CONTROL EASIER TO DESIGN, INSTALL, OPERATE

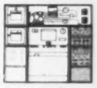
Now an air conditioning engineer can "see" up to 50 separate fan system diagrams and floor plans, read and adjust critical temperatures throughout a multi-story building ...all at one small console.

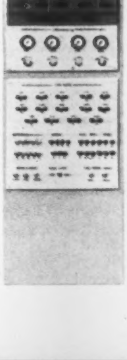
In addition to the Selectographic projection feature, Honeywell's modular *building block* design brings new flexibility, new economy to centralized air conditioning controls. Starting with the basic unit—the central Selectographic Console—other modules of a standard 2′ x 2′ dimension may be added as the need arises or as the budget permits. Honeywell's Selectographic Supervisory DataCenter can be installed in buildings of all sizes, of all purposes—and grow with the structure itself.





REFRIGERATION PANEL All major electrical accessories of refrigeration system can be started and stopped from this panel. Where the systems require it, the chilled water temperature can be controlled by a precision continuous recording controller in the chilled water supply line. A second controller may indicate and record system output in BTU's. The total BTU output is shown on a numerical counter which can be compared to the total electrical input shown on a similar counter to analyze system efficiency.

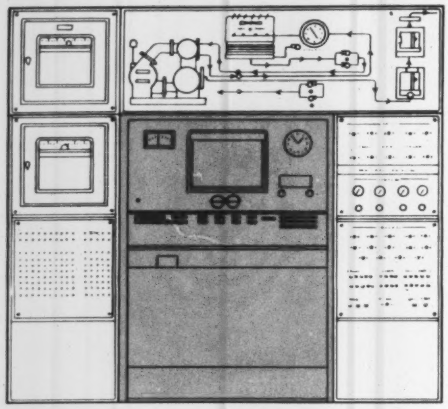




ALARM AND ANNUNCIATOR SECTION

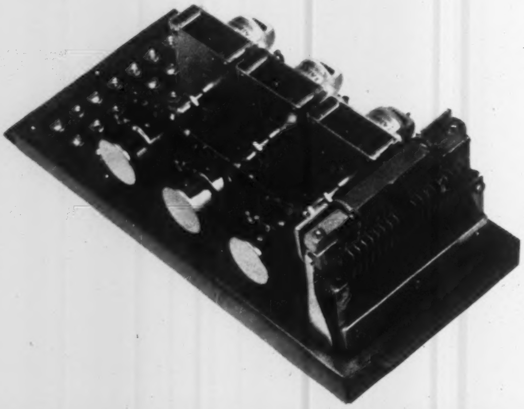
This module contains all air conditioning and refrigeration system alarm pilot lights and equipment operation pilot lights. In addition it may contain cold storage or special climate room limit alarms and other temperature, humidity, flow and pressure monitoring alarms as required.

HOW THE SELECTOGRAPHIC WORKS



NEW PROJECTION SYSTEM STORES ENTIRE BUILDING'S FLOOR PLAN IN CIRCULAR FILE OF 50 SLIDES READY FOR INSTANT SCANNING

The 50-slide projector is operated by pushing a button. Desired floor plan or system diagram shows on the screen; consoles of push buttons then are automatically switched to control that plan or system. One set of push buttons will cause the temperatures at the check points on the plan to be indicated on the console. Simply pushing the proper increase or decrease button will adjust or reset one or all of the thermostats on the plan except those in private spaces. Pushing a similar set of buttons will start and stop all supply and exhaust fans; another set will position all dampers.



MULTIPLEX UNIT

The ability to control an entire system by one set of buttons is made possible by this Honeywell Multiplexer—a multipole bar relay energized by the same button as the projector. All temperature control points and sensing points are connected through this bar relay to the control buttons on the console. Wiring is simplified and substantially reduced.

MORE THAN 400 CONTROL CENTERS using the basic principles outlined here have given improved operating efficiency, better use of specialized manpower, longer equipment life, operational savings and more comfort to hospitals, schools, hotels, office and industrial buildings, banks, shopping centers and churches. A Honeywell control specialist will be glad to work with architect or engineer even before blueprints are started. At this stage his knowledge will be most useful in designing and installing a system that will give the greatest possible satisfaction to all concerned. For more information send the coupon or call one of the 112 local Honeywell offices across the nation.

CLIP AND MAIL COUPON FOR DETAILED SPECIFICATIONS

Honeywell

H *First in Control*

HONEYWELL
DEPT. SDC110
MINNEAPOLIS, MINNESOTA

Gentlemen:

Please send me detailed specifications on Honeywell's new Selectographic Supervisory DataCenter.

NAME______________________________

FIRM______________________________

POSITION__________________________

ADDRESS___________________________

CITY________________STATE__________

With **Youngstown Steel Pipe** on the job new **Lamson & Sessions** plant gets dependable, life-time piping system

To keep pace with the growing demand for their complete line of industrial fasteners, Lamson & Sessions Co. are erecting this new, beautiful, highly functional plant on Cleveland's Tiedeman Road. Providing dependability and long life for the plant's all-important piping system will be tons of quality Youngstown Steel Pipe.

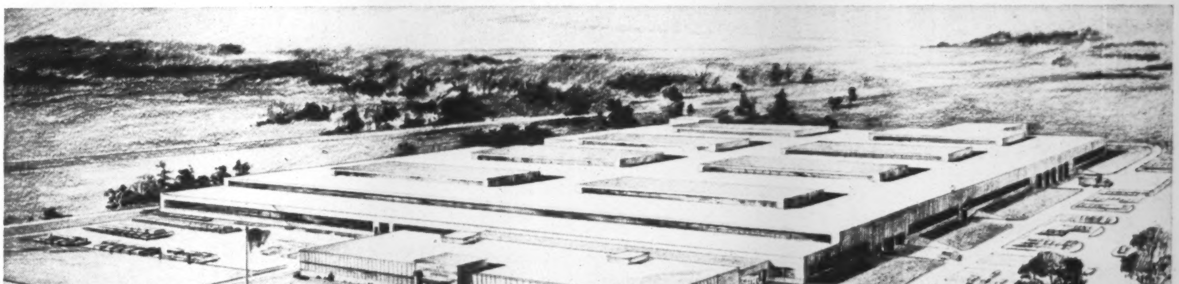
For years leading architects, as well as progressive plumbing and heating contractors, have specified Youngstown Steel Pipe because it's been their guarantee of trouble-free water piping systems.

Youngstown Steel Pipe is made of only the finest steel with exacting attention given to all sizing, threading and finishing processes. Close quality control of every step in Youngstown's fully integrated operations—from ore mining to finish threading—produces the best pipe obtainable—anywhere.

Your Youngstown Pipe Distributor is only a phone call away—why not contact him today?

Building Owner:	Lamson & Sessions Company, Cleveland
Engineer:	The George S. Rider Company, Cleveland
General Contractor:	The Sam W. Emerson Company, Cleveland
Plumbing & Heating Contractors:	The Smith & Oby Co., Cleveland The Ed Sweeny Company, Cleveland
Distributor:	Grinnell Company, Cleveland

THE YOUNGSTOWN SHEET AND TUBE COMPANY
Manufacturers of Carbon, Alloy and Yoloy Steel
General Offices - Youngstown 1, Ohio
District Sales Offices in Principal Cities



Specify Youngstown and secure these 7 Points of uniform goodness

- uniform ductility
- uniform lengths
- uniform threading
- uniform weldability
- uniform wall thickness and size
- uniform strength and toughness
- uniform roundness and straightness

QUALITY
YOUNGSTOWN
SERVICE

WARREN PETROLEUM BUILDING

TULSA, OKLAHOMA

Architects & Engineers
SKIDMORE, OWINGS & MERRILL

General Contractor
W. R. GRIMSHAW CO.

Mechanical Contractor
WATT PLUMBING, AIR CONDITIONING & ELECTRIC

Clean Air
AMERICAN AIR FILTER CO., INC.

AAF's ROLLOTRON — the filter that eliminates scheduled filter maintenance—keeps air electronically clean!

This beautiful new building contains the very latest in effective, maintenance-free air filtration equipment. AAF's revolutionary ROLLOTRON combines the ultimate efficiency of electrostatic precipitation and the maintenance-free features of renewable-media filtration.

Dust particles are electrostatically attracted to the dry plates of ROLLOTRON's precipitator section. When the dust build-up becomes great enough, the accumulation is carried by the air stream onto the automatically renewing media of the storage section. Here, the dirt and used media are tightly wound into a compact roll for easy disposal.

For complete information on the ROLLOTRON, call your nearest AAF representative or write direct. Address Mr. Robert Moore, American Air Filter Company, Inc., 373 Central Avenue, Louisville, Kentucky.

Mr. W. K. Warren, chairman of the board and chief executive officer of Warren Petroleum Corporation, in his office. Warren Petroleum is a wholly-owned subsidiary of Gulf Oil Corporation.

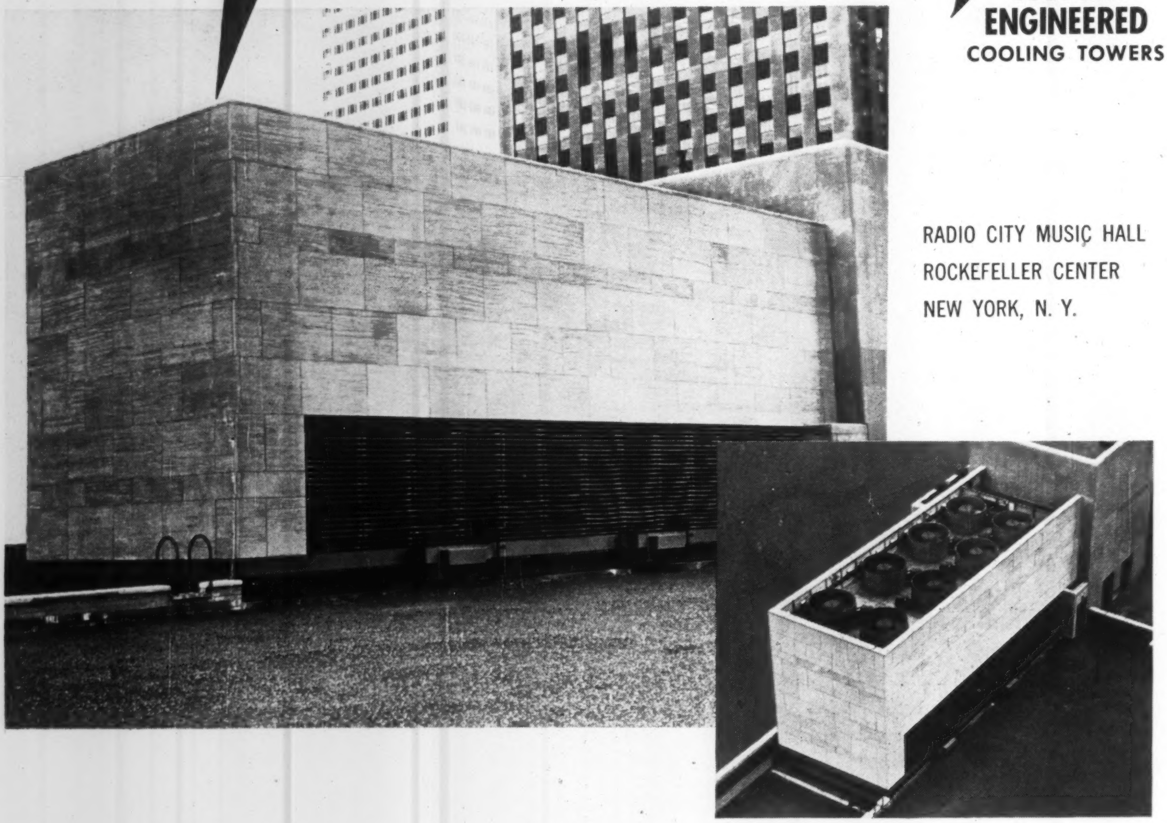
AAF American Air Filter
COMPANY, INC., LOUISVILLE, KENTUCKY

See the new ROLLOTRON at the AAF Exhibit, International Heating and Air Conditioning Exposition

Here's how Phillips solves

another problem solved by Phillips

CUSTOM ENGINEERED
COOLING TOWERS



RADIO CITY MUSIC HALL
ROCKEFELLER CENTER
NEW YORK, N. Y.

The problem:

Combining beauty and efficiency in a limited space at low cost.

The solution:

PHILLIPS CUSTOM ENGINEERED COOLING TOWER with limestone casing to blend perfectly with surroundings. Space utilized so that additional tower may be erected as need arises. This tower gives maximum cooling surface per foot of space, and minimum maintenance cost.

cooling tower problems CUSTOM ENGINEERING

Whatever the problem — noise . . . freezing . . . space . . . maintenance . . . atmospheric conditions — you'll find PHILLIPS CUSTOM ENGINEERED COOLING TOWERS solve the problem better . . . at less cost. Why? Because here are the only cooling towers that are custom engineered to suit the conditions of each application. No wonder each year, more and more specifications call for PHILLIPS CUSTOM ENGINEERED COOLING TOWERS.

EVERY STEP CUSTOM ENGINEERED

CASINGS
Selection of material to fit Architectural treatment and surrounding conditions.

BASINS
Redwood, stainless steel, galvanized steel, carbon steel up to and including ¼" thickness with any desired coating, reinforced concrete basins supported on steel beams.

FILL
Redwood or pressure treated Douglas Fir. Slip-fit, self-supporting for easy removal for interior maintenance.

FANS
Multi-blade, adjustable propeller type fan in cast aluminum, stainless steel or Monel. Either direct driven fan in small sizes or indirect right angle worm gear drives.

DISTRIBUTION SYSTEM
Spray nozzle type or open Weir gravatational type system.

FRAMEWORK
Hot dipped galvanized structural steel .250" minimum thickness. Redwood or pressure treated Douglas Fir.

Write for literature

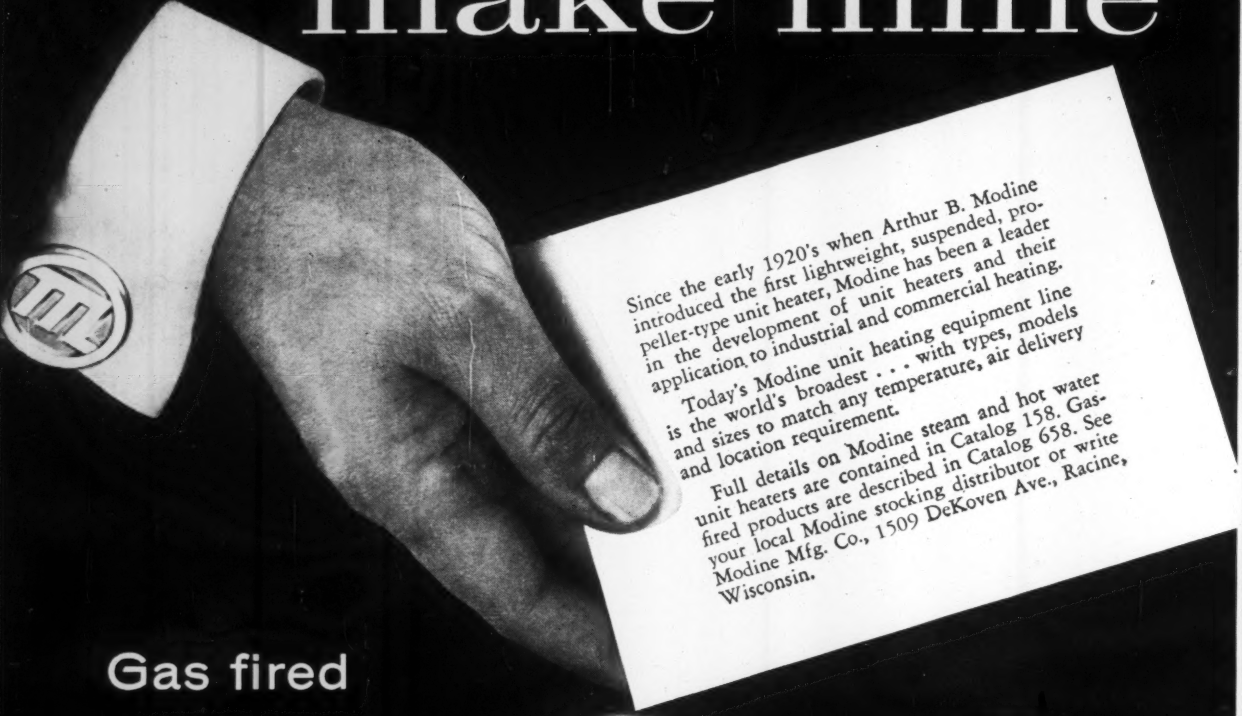
SPECIAL FEATURES ON ALL TOWERS

Corrosion Resistant Hardware. Aluminum or Stainless Steel Fans. Nailless Redwood Filling Removable at Tower Base. Nailless Three-Pass Redwood Eliminators. Removable Louvers.

Phillips Cooling Tower Co., Inc.
220 DUPONT ST., BROOKLYN 22, N. Y.

For the world's most complete

make mine

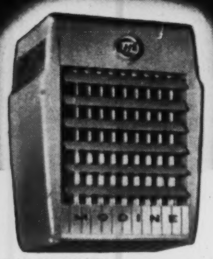


Since the early 1920's when Arthur B. Modine introduced the first lightweight, suspended, propeller-type unit heater, Modine has been a leader in the development of unit heaters and their application to industrial and commercial heating.

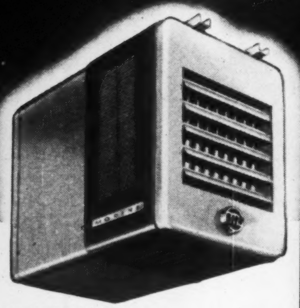
Today's Modine unit heating equipment line is the world's broadest . . . with types, models and sizes to match any temperature, air delivery and location requirement.

Full details on Modine steam and hot water unit heaters are contained in Catalog 158. Gas-fired products are described in Catalog 658. See your local Modine stocking distributor or write Modine Mfg. Co., 1509 DeKoven Ave., Racine, Wisconsin.

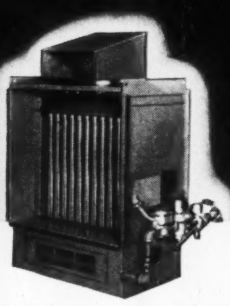
Gas fired



PROPELLER UNITS.
Beautifully styled, fuel-thrifty, lightweight. Stainless steel burners. Eight models — 25,000 to 310,000 Btu.

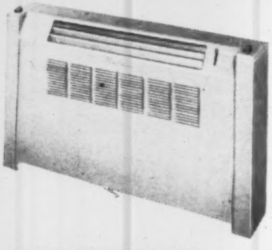


BLOWER UNITS.
For heating, ventilating. May be installed in area served or remotely located with duct work. Seven models — 50,000 to 310,000 Btu.

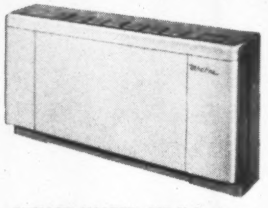


DUCT FURNACES.
Stainless steel heat exchangers and burners. Ideal for air conditioning systems or straight heating. Five models — 88,000 to 213,000 Btu.

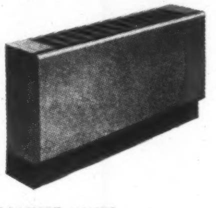
Here are other popular Modine



SELF-CONTAINED AIRditioners.
Incorporate 2-pipe steam or hot water heating with a self-contained refrigeration circuit.



CHILLED-WATER AIRditioners.
Cool with chilled water, heat with hot — from a central source. Four sizes, 2/3 to 2 tons.



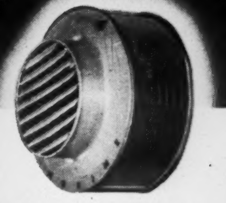
CABINET UNITS.
Provide quiet, positive heating, ventilating. Seven enclosure types — 120 to 640 Edr.

unit heater line, just say...

MODINE

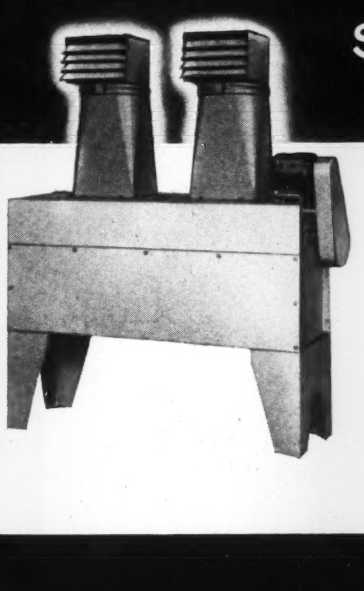
HORIZONTAL DELIVERY TYPE.
Versatile in application, easy to install. Can be directly suspended from supply line without other supports — 24 standard and low-outlet-temperature models.

VERTICAL DELIVERY TYPE.
Offered in 28 standard and low-outlet-temperature models. Choice of four air deflectors. Lightweight, rugged construction.



"POWER-THROW" TYPE.
For hard-to-heat locations. Powerful horizontal discharge "throws" heat up to 140 ft. 10 standard and low-outlet-temperature models.

Steam and Hot Water

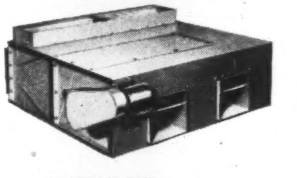


BLOWER UNITS.
Designed for large-volume air handling applications. Available in 5 types, each in 8 sizes ranging from 600 cfm to 33,000 cfm.

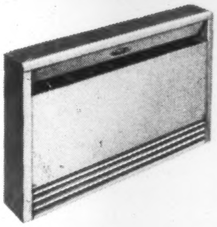
HCR

HIGH CORROSION RESISTANT MODELS.
For use where severe internal corrosion is a problem. Available in all three propeller types, in 44 models, these units carry triple the standard guarantee.

products



HEATING AND VENTILATING UNITS.
Offered in 5 types, 8 models, in sizes from 600 to 33,000 cfm. Wide range of accessories to accommodate any application.

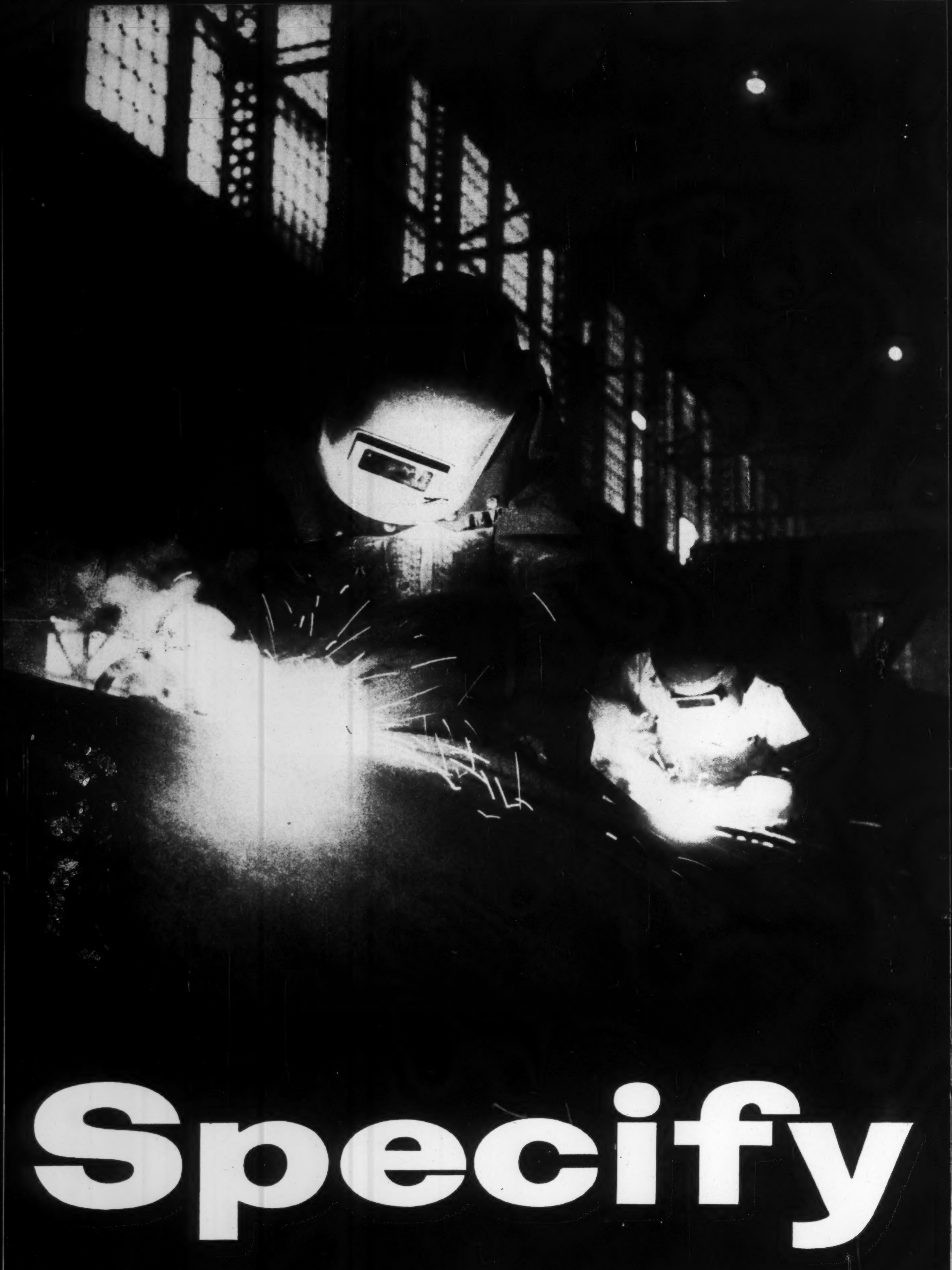


CONVECTORS.
Offered in 30 types and 8,000 sizes for every building need. Choice of standard and heavy-gauge enclosures.

Modine
MANUFACTURING COMPANY

In Canada: Sarco Canada, Ltd., Toronto 8, Ontario

UR-1379


Specify

RECO water heating equipment for ALL new buildings!

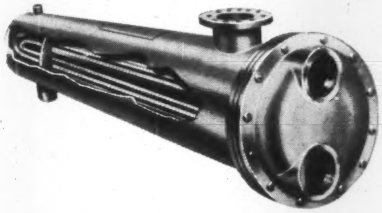
The RECO price is competitive! Delivery is fast and sure. All RECO products are guaranteed. Because RECO water heating plants handle maximum demand without straining, there will be a minimum of maintenance costs to add to your client's overhead.

Specify RECO for your next heating job. For catalogs, write: Richmond Engineering Company, Inc., 7th & Hospital Sts., Richmond, Virginia.

20 RECO HEATING & PLUMBING PRODUCTS

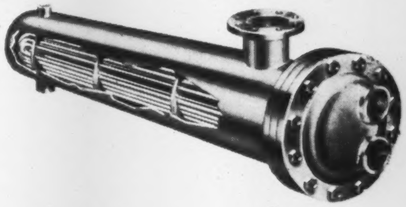
- Convertors
- Hi Temp Hot Water Convertors
- Instantaneous Heaters
- Kitchen Booster Heaters
- Snow Melting Exchangers
- Feed Water Heaters
- Condensate Coolers
- Economizers
- Swimming Pool Heaters
- Storage Heaters
- Steam Generators
- Oil Tank Suction Heaters
- Fuel Oil Heaters
- Pneumatic Tanks
- Surge Tanks
- Condensate Tanks
- Expansion and Compression Tanks
- Blow Off Tanks
- Boiler Blow-Down Tanks
- Flash Tanks

CONVERTORS



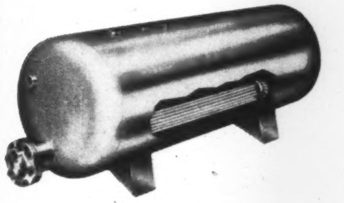
For *forced circulation* hot water heating systems specify RECO converters. Live steam in a steel shell heats water in a copper tubing network. Removable heating elements are seamless U-bend tubes to eliminate internal joints and expansion stresses.

INSTANTANEOUS HEATERS



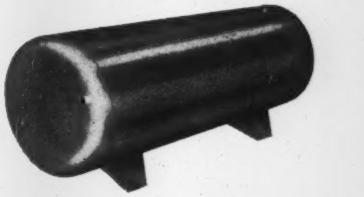
Make it a RECO instantaneous heater when your steam supply is adequate for peak loads, and a continuous supply of hot water is needed. Live steam in a steel shell heats water or other liquids in a multiple-pass network of copper tubing.

STORAGE HEATERS



Vertical and horizontal RECO storage heaters furnish large quantities of hot water for use at irregular intervals. Removable heating elements of seamless copper U-bend tubes. Fabricated from steel, copper-silicon or stainless. Linings: Baked-on phenolic resin, galvanized, cement, copper or clad materials.

STORAGE TANKS



RECO custom-builds storage tanks to *your specifications.* Bulk tanks, hydro-pneumatic tanks, above or underground tanks . . . ANY SIZE OR MATERIAL. All carry the famous RECO one-year guarantee of materials and workmanship. Underwriter's label for oil tanks or ASME stamp for pressure tanks.

◀ **FOR YOU . . . WITH OUR COMPLIMENTS.** We're so pleased with the way this photo captured "Industry at Work", we'd like to send you a full-size mat copy. Just write RECO, 7th and Hospital Streets, Richmond, Virginia.

RICHMOND ENGINEERING CO., INC.

Richmond, Va. – Greensboro, N. C. – West Columbia, S. C.

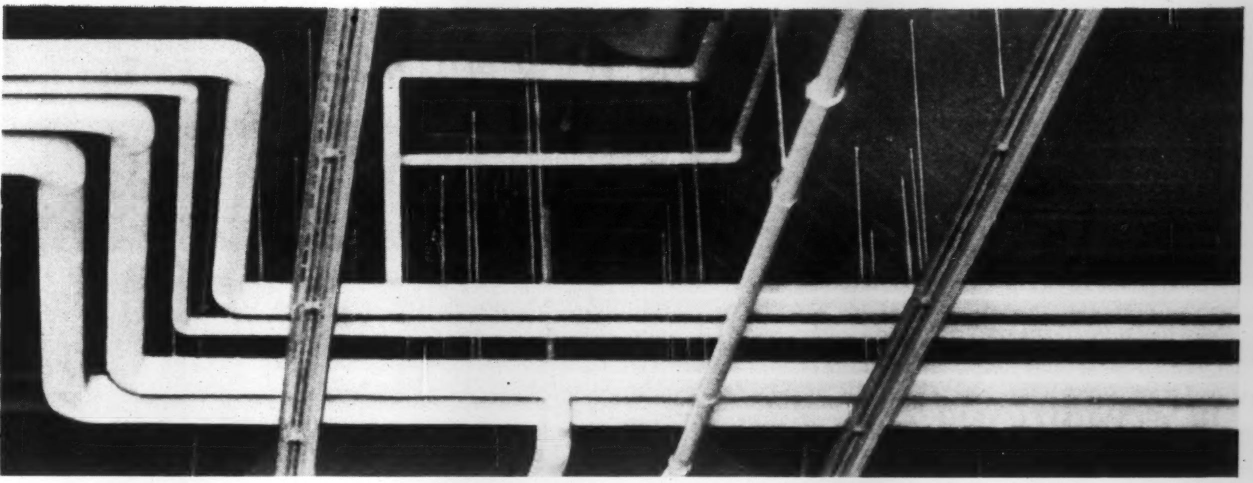
RECO

Improved

...*with*

One look and you know it's Fibrocel ...the only molded insulation for commercial pipelines...in attractive new VS and VB jackets.

Installs easier, faster . . . because its size and shape never vary. Butt straps go on easier, too.



JOHNS-MANVILLE ANNOUNCES . . .

Fibrocel Insulation

2 new types of white jacketing

Easier to install · More attractive · Thermally effective · Priced low for substantial savings

Test improved new Fibrocel®—even on just a short run of pipe—and see the difference! See why this rigid, molded insulation makes an installation so many ways better!

First thing you notice about Fibrocel is that it's molded. For only an unvarying metal mold can produce such nearly perfect roundness, such uniformity of size and shape. The result—less time needed to get the neater, better fitting job you want . . . with the pipeline always dead centered in the insulation for top insulating value.

Rigidity is another Fibrocel advantage. Working with a rigid material, butt straps go on easier, faster. And your inspection (whether one day or one year after installation) reveals not a sign of denting, bulging or "fish mouthing"—so common with soft insulations.

New White Jackets

Fibrocel now comes in virtually any jacket you'll ever need. *New Type VS* is richly creped, pure white kraft backed by 1/3-mil foil. One painting provides complete coverage. Yet it's priced as low as canvas. Then, there's new *Type VB*. Priced slightly higher—but well worth it! Outer surface has same rich creping as Type VS, inner vapor barrier is full mil thickness of aluminum foil, pipe facing is creped black kraft. Creping permits surfaces to "move" with foil as moisture conditions vary. Fibrocel is also available with "Type C" canvas finish.

Let us send you a copy of IN-155A, the informative 8-page Fibrocel folder. Write for it today. Address Johns-Manville, Box 14, New York 16, New York. In Canada, Port Credit, Ontario.

JOHNS-MANVILLE

JOHNS MANVILLE JM PRODUCTS

More attractive. Rigid, dimensionally uniform, Fibrocel fits tighter, neater. Jacket doesn't dent, bulge or "fish mouth."

Insulates better. Because Fibrocel is perfectly round, pipe is always "dead center," for maximum insulating value.

Costs less. Don't let Fibrocel's appearance and efficiency mislead you. It's priced low!

Takes abuse . . . in rough service . . . keeps its "just installed" appearance through years of service.

CARVER
THE
Quality Name
in Pumps

Muscatine, Iowa,

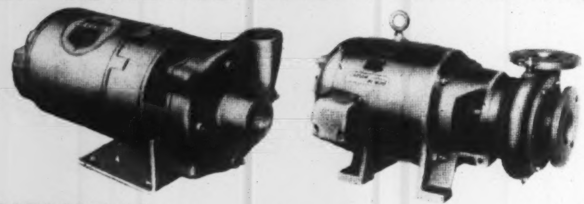
from the Heart of AMERICA

THE ANSWER TO YOUR PUMPING PROBLEMS

CARVER

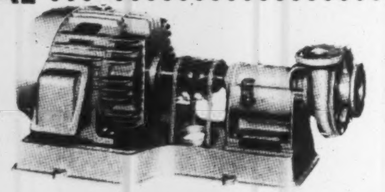
Over 20 years of answering pumping problems has produced the right pump to handle your exacting needs. Carver exclusive designs and experienced craftsmen, mean lower cost, more reliable pumping.

AIR CONDITIONING



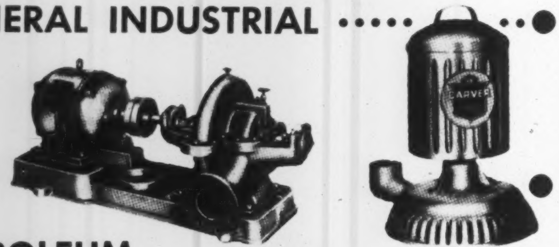
- Heads to 240′ and 1550 GPM, sizes 1-5″. Hydraulically correct, available in stainless, bronze and other comb. Std. are bronze fitted or all iron with shaft sleeve and wear ring. Low and high head for both 1750 and 3450 RPM.

CHEMICAL



- Chemical Process frame mounted units, sizes 1-5″, capacity 1500 GPM, heads to 390′, open or enclosed impeller, 1150, 1750 or 3450 RPM. Water cooled, oil lubricated, ball bearings, flushing or smothering glands, mech. seals. A rugged machine designed for maximum efficiency in chemical service.

GENERAL INDUSTRIAL

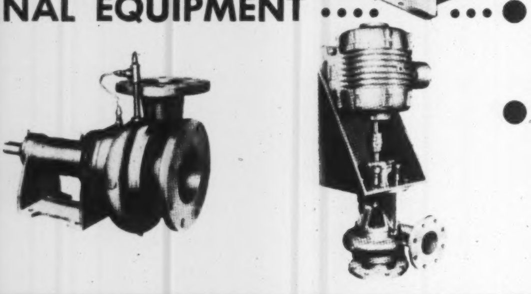


- Horizontal Split Case units, sizes 2-8″, high, medium and low head ranges in our 400 and newer 500 series. One piece case bronze (Std.) impeller, casing and impeller wear rings, hard bronze shaft sleeves, HD ball brgs., mech. seals or packing, CI or steel bases. Constructed to your specification.
- Submersible, fully automatic general service Sump Pump.

PETROLEUM

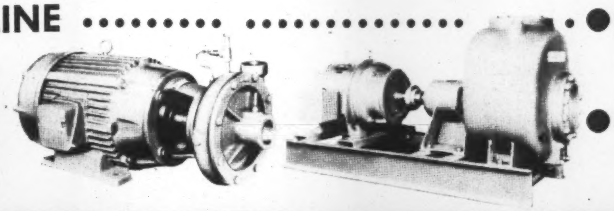
- A proven HD line to 5″ sizes for high, medium and low head service. Features shaft sleeves, wear rings, bronze enclosed impeller, mech. seals, HD ball bearings. Meets A.P.I. Std. 610.
- Self-priming units, sizes 1-10″ HD, designed for service under A.P.I. Std. 610. Available for electric, gas, diesel, belted or turbine drive.

ORIGINAL EQUIPMENT



- Three lines of high and low head machines, designed for 1150, 1750, 3450 speeds. Three price ranges, over 500 selections, 1-10″ heads to 400 ft., capacities 4500 GPM.
- Vertical Chair Mount Pumps, sizes 1-5″, open or enclosed impellers, various alloys available, std. construction is bronze or all iron fitted. Motor is standard squirrel cage mounted on heavy fab. steel base. Check these when high head self-priming qualities are needed.

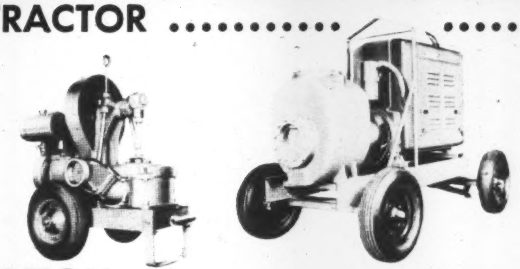
MINE ....



- Straight centrifugal Mine Pumps of zincless bronze, all iron and other alloys. Sizes 1-5". Heads to 400', capacities to 2500 GPM. Heavy duty machines, meeting U.S.B.M. standards.
- Self-priming Mine Pumps, 1-10", capacities 4500 GPM, electric, diesel, gas or belt drive. Extremely heavy construction. Designed for rugged mine service.

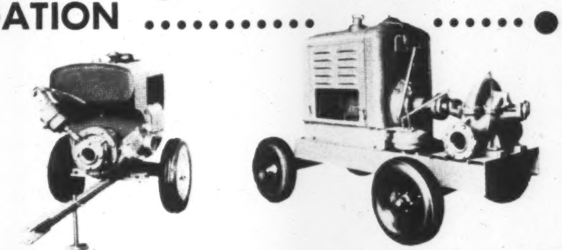
THE COMPLETE LINE OF QUALITY .... Pumps

CONTRACTOR ....



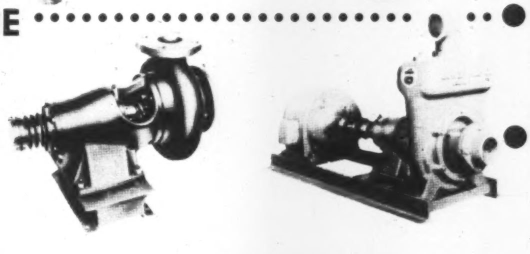
- HD 4" Diaphragm Pump for general service. Pumps sewage and other liquids containing high volume large solids. Indestructible.
- This design in 6-8-10" can be belt, turbine or electric motor driven. Illustration shows gas engine used in barge unloading oil service. Capacity to 3800 GPM. Meets A.P.I. Std. 610.

IRRIGATION ....

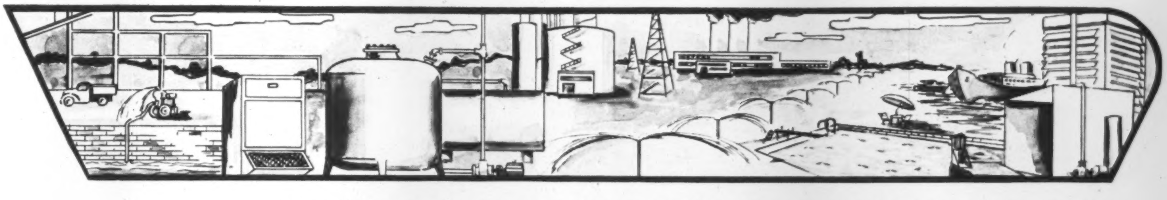


- High Pressure Irrigation, sizes 1-5". Air-cooled or liquid-cooled engine driven. Ideally suited for fire service, jetting and general service requiring high pressure and portability. Range to 130 PSI, 2500 GPM.

MARINE ....



- Marine Reversible, a unique design having maximum efficiency while turning in CW or CCW. Heavy all bronze construction is std., also available in other alloys. An unusual pump long a std. in marine design.
- Self-prime, close-coupled or direct connected. All bronze or all iron for bilge service, fuel transfer and many general services. Sizes 1-10".



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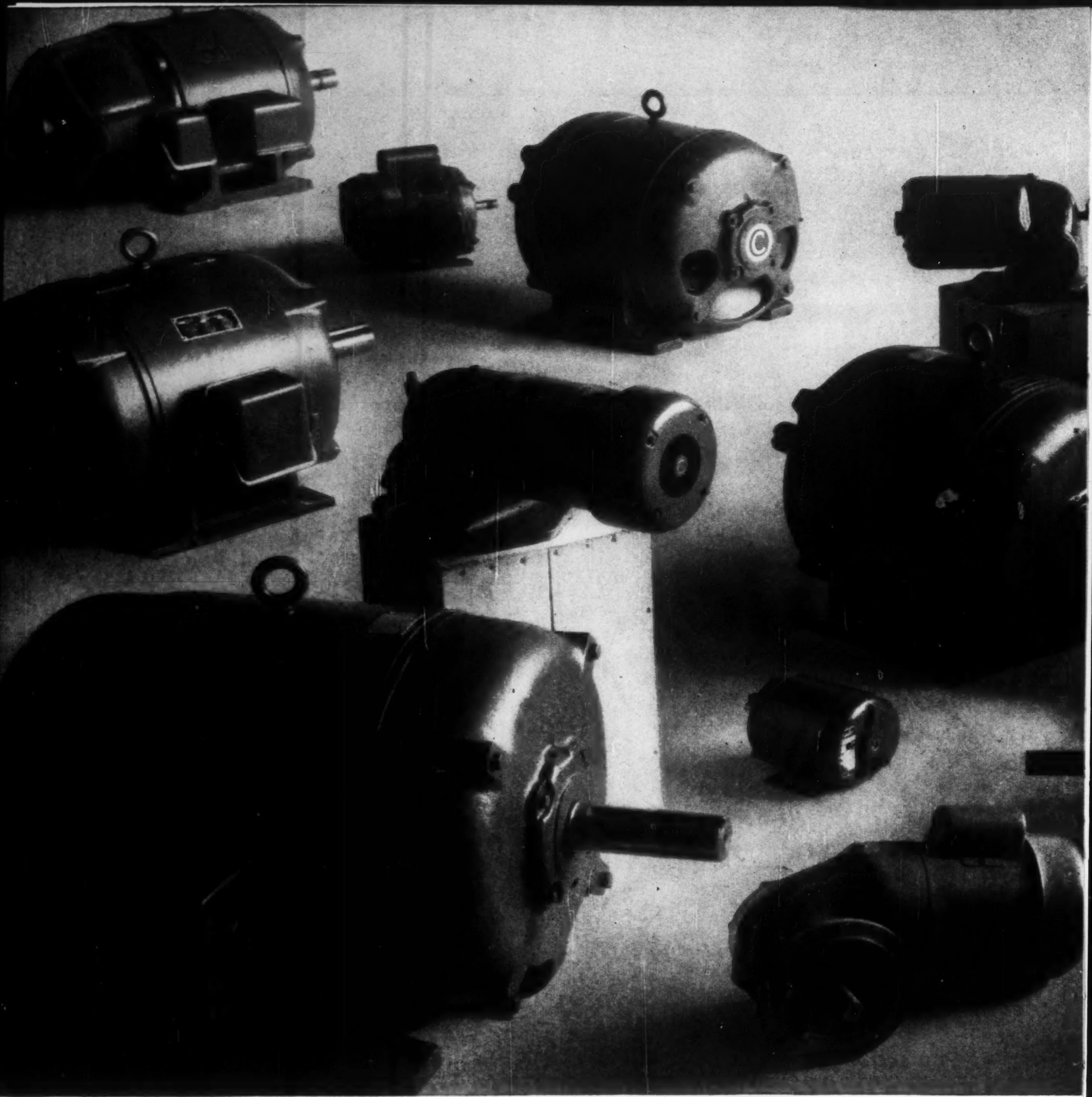

How you get *more* *than just a motor*

You get true design flexibility with

Suppose you have a particularly tough design problem—one that requires a specific motor to give the best results. You don't want to take a chance on not getting the right motor for the job.

This is where Century Electric's complete line of a-c and d-c motors, 1/20 to 400 hp, can be of help to you. You have a complete variety of motors from which to choose. Makes it lots simpler than shopping around to find what you need.

For help on your particular design problem, contact your Century Electric sales engineer. He has the know-how that comes from applying, engineering and thinking motors and nothing but motors day in and day out. If he can't give you on-the-spot

Century Electric's complete line of motors

answers, he has an experienced engineering staff backing him that can come up with quick, dependable answers to your problem.

This is why you get *more* than a motor when you take your motor and generator design problems to Century Electric. You get a quality product backed by know-how. You can call on men who want to help you get the right motor for your job. For more information, contact your local Century Electric Sales Office or Authorized Distributor.

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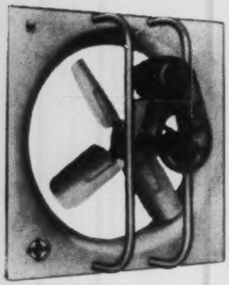
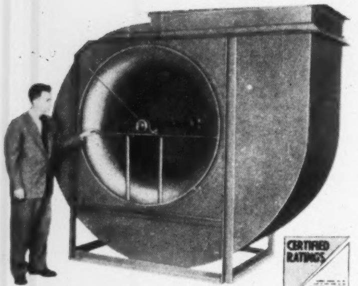
St. Louis 3, Missouri *Offices and Stock Points in Principal Cities*

Century

58-5

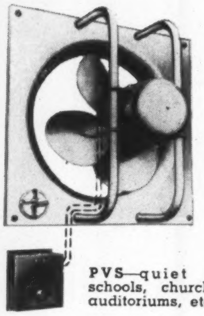


PVB—generally used in factories, warehouses and foundries.

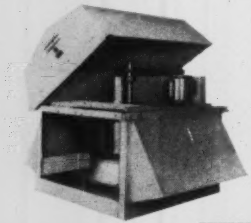


BACKWORD CURVE CENTRIFUGAL BLOWERS for schools, churches, public buildings, industrial plants, etc.

CERTIFIED RATINGS AMCA

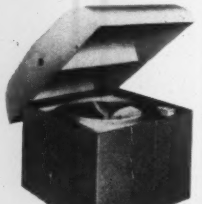


PVS—quiet for schools, churches, auditoriums, etc.



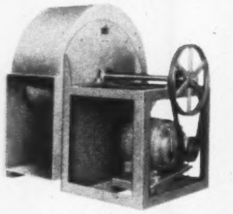
CENTRIFUGAL POWER ROOF VENTILATOR—for auditoriums, schools, churches, public buildings, plants.

CERTIFIED RATINGS AMCA



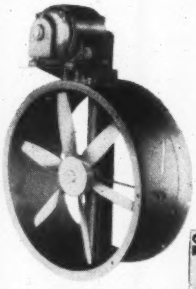
PROPELLER-TYPE ROOF VENTILATOR—for apartments, plants, schools, etc.

CERTIFIED RATINGS AMCA



BACKWARD CURVE BELT DRIVE UTILITY BLOWER—recommended for general ventilation.

CERTIFIED RATINGS AMCA



DUCT or TUBAXIAL—for paint spray booths, etc. —explosion-proof.

CERTIFIED RATINGS AMCA

Peerless Electric® and the Massachusetts Line®*

AIR MOVING EQUIPMENT

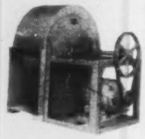
is designed for low initial cost and continuous, trouble-free performance.

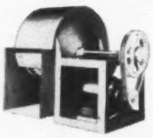
Peerless Electric air moving equipment offers the user low initial cost and trouble-free, continuous performance. Each unit is completely Peerless built. Motors are designed, engineered and manufactured in the Peerless Electric Motor Division. They are made to N. E. M. A. specifications and performance-matched to the fans or blowers they must power.

Each Peerless Electric unit indicated with the AMCA seal is rated by the new Air Moving and Conditioning Association. Installation data, performance tables, dimensions, ratings, general construction data, recommended specifications, and guarantee information are all available in the new Peerless Electric catalogs. Write for a complete set today.

*The Massachusetts Line® is now manufactured by The Peerless Electric® Company

A COMPLETE LINE OF AIR MOVING EQUIPMENT





Member of the Air Moving and Conditioning Association, Inc. (AMCA)

Peerless Electric

FAN AND BLOWER DIVISION
THE Peerless Electric® COMPANY
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FANS • BLOWERS • ELECTRICAL MOTORS

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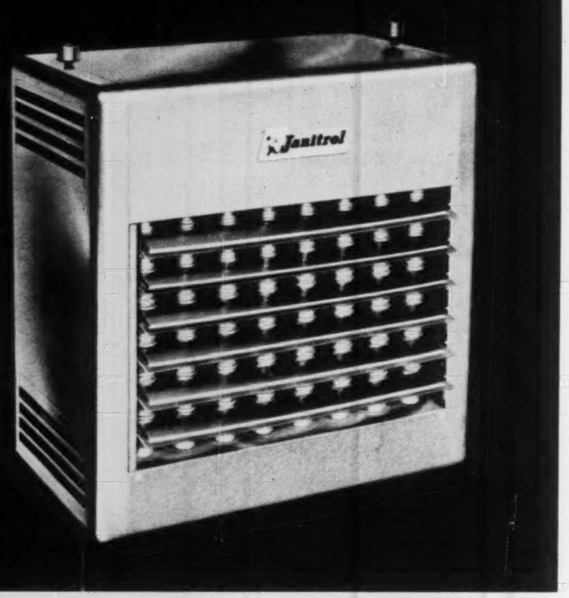
JANITROL

UNIT HEATERS

provide fast, clean heat for a variety of applications



Sell and Grow with

JANITROL

Gas-fired Commercial and Industrial Heating Equipment

VERSATILE NEW JANITROL UNIT HEATERS

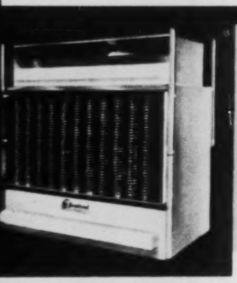
Remember this about Janitrol Unit Heaters: their versatility and efficiency, combined with low cost, means you can use them to advantage for most every commercial or industrial building.

They save installation time and labor. They do not need expensive duct work. They are completely automatic. They offer convenient "dual fuel" performance—use natural or LP gas; may be switched from one fuel to the other automatically. And they direct heat *where* needed only *when* it is needed—assure top operating economy.

And remember, too, that no other unit heater can match their record for durability and low maintenance. The exclusive Janitrol Multi-Thermex heat exchanger is so enduring that replacements for any cause have been less than ¼ of 1% in over two million heat exchanger tubes produced since 1940!

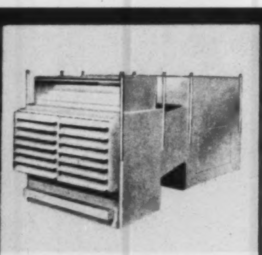
Dependability and economy—these are benefits that only time and experience can bring. Be sure Janitrol Unit Heaters are the choice for your next job.

Fill every commercial and industrial heating need from JANITROL'S broad line . . .



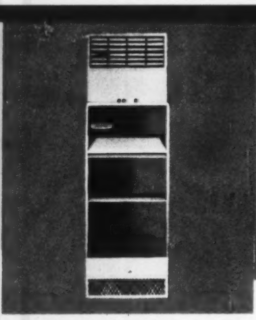
GAS-FIRED DUCT FURNACES

Engineered for installation in a duct where air is circulated by a separate blower. Especially adaptable for use in combination with cooling. Two sizes: 200,000 and 300,000 Btu/hr. input—may be combined to provide capacity from 200,000 Btu/hr. up, in increments of 100,000 Btu/hr. input. Five sizes, from 85,000 to 225,000 Btu/hr. in Duct 55 models.



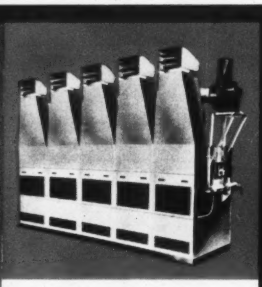
BLOWER-TYPE UNIT HEATER

Allows air delivery from greater heights and against greater static pressures. Models with exposed or enclosed blowers. A.G.A. approved as low and high static-type blower unit heater for air delivery to duct system up to 1.0 in. W.C. external static. Heat sections factory assembled. Sizes: 300,000, 400,000 and 500,000 Btu/hr. input.



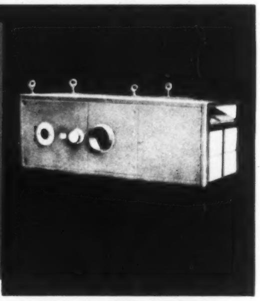
FLOOR-TYPE UNIT HEATER

Cold air drawn from floor level is heated, filtered and discharged horizontally overhead. Quiet, clean, carefree —ideal for offices, restaurants, stores, labs, etc., requiring a compact unit. May also be connected to a duct system. Six sizes: Rated input from 65,000 to 200,000 Btu/hr.



HEAVY DUTY BLOWER HEATERS

For unit heating, central heating and air conditioning. Wide range of standard blowers and motors assures correct air delivery and temperature rise in each application. Factory assembled and tested. Capacities from 250,000 Btu to 1,750,000 Btu/hr. input.



NEW JANITROL HORIZONTAL OIL UNIT HEATER

For suspension overhead. Saves floor space. Compact, efficient, low-maintenance design. May also be used to feed duct system. Sizes from 84,000 to 250,000 Btu/hr. output.

ARCHITECTS, ENGINEERS AND CONTRACTORS *information service*

Write today for complete information on heating with gas in buildings of every type. There's no obligation.

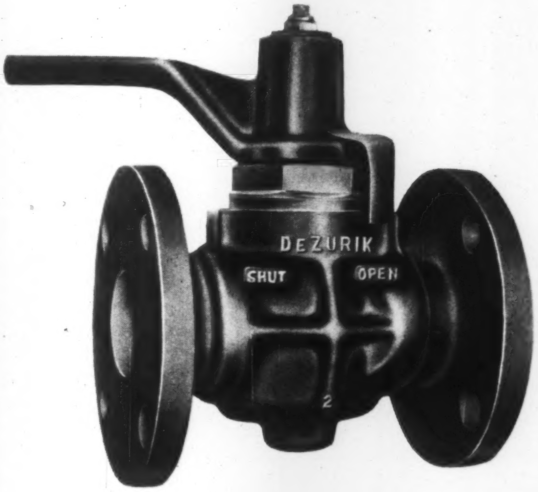
JANITROL

HEATING AND AIR CONDITIONING DIVISION
Surface Combustion Corporation, Columbus 16, Ohio
In Canada: Moffat Heating & Air Conditioning Division
Moffats, Ltd., Toronto, 15

Also Makers of Surface Industrial Furnaces, Kathabar Humidity Conditioning, Janitrol Residential Heating and Cooling Equipment

DeZurik Valves . . .

. . . so obviously right for air conditioning!



DeZurik Valves, with exclusive Eccentric Action, provide advantages you find on no other valve! Dead-tight shut-off . . . easy, quarter-turn operation every time, WITHOUT LUBRICATION . . . longer life . . . no chatter or whine . . . these features make DeZurik Valves so logical . . . so obviously right for air conditioning service.

For more information, see the DeZurik representative in your area, or write to

DeZURIK CORPORATION
SARTELL, MINNESOTA

DeZurik Valves supplied for air conditioning service are made of a close-grained nickel chromium alloy iron for high strength and good corrosion resistance. Resilient plug facings guarantee tight shut-off. Throttling characteristics are uniform throughout the operating range; the same valve can be used for shut-off or throttling. Straight-thru flow provides high capacity and low pressure drop with a minimum of turbulence.

DeZurik Valves can be supplied with a pressure gauge connection on the downstream side of the valve body for use in balancing. They can also be supplied in three-way and four-way models.

Typical applications include:

Chilled Water Balancing

Chilled Water Pump Shut-Off

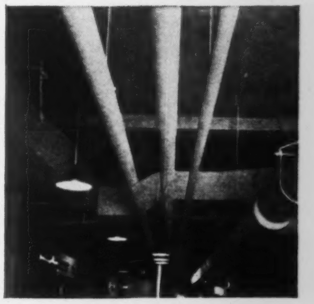
Condenser Pump Shut-Off

Cooling Tower Shut-Off and others.

These lines for beauty . . .

JOHN WANAMAK

The new John Wanamaker Suburban Store in Jenkintown, Pa. *Architect:* Massena and DuPont, Wilmington, Del. *Associate Architect:* Edward C. Cooper, Wilmington, Del. *Mechanical Contractor:* W.M. Anderson Company, Philadelphia. *Pipe Jobber:* C.J. Rainear & Company, Inc., Philadelphia.



. These lines for service

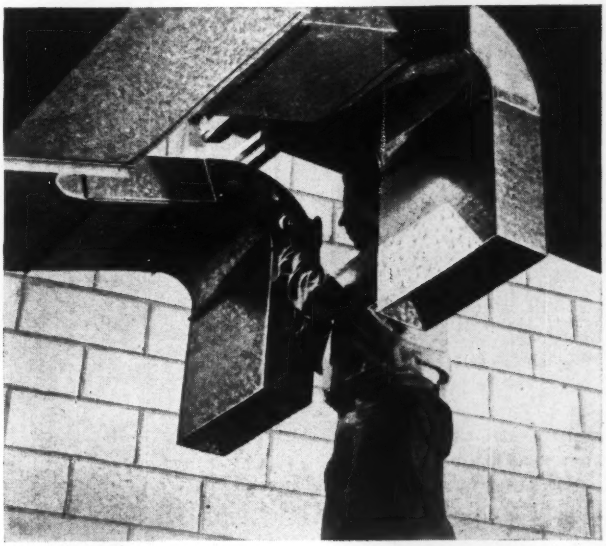
Bethlehem steel pipe and galvanized sheets lend permanence and economy to heating and air conditioning facilities

Beth-Co-Weld continuous-weld steel pipe is a popular choice for air-conditioning systems and sprinkler lines—and for all general purpose piping—because it's easy to work, goes up fast, and gives years of low-maintenance service.

There's no pipe more dependable than steel—and it's still the lowest-cost pipe you can buy!

Beth-Co-Weld pipe is available in standard and extra-strong weights in sizes from ½ in. to 4 in. Black or galvanized, it is supplied in uniform 21-ft lengths, or can be specified in random or cut lengths.

Clean lines of well-constructed pipe and ductwork bring functional beauty to the basement of the John Wanamaker Suburban Store in Jenkintown, Pa.



Bethcon continuously galvanized steel sheet is neither too hard nor too soft. That's because Bethlehem's continuous galvanizing process includes a special annealing cycle which gives the basic steel an ideal blend of strength and ductility.

The zinc coating on a Bethcon sheet is as tight as any coating you can find. Even when a Bethcon sheet is doubled back on itself, the galvanized coating does not flake or peel off. Hence ductwork made of Bethcon pays off in long service life without maintenance.

Specify Bethcon galvanized sheet steel on jobs that require sheet metal ductwork. It is available in a wide variety of gages, with a base metal of either plain open-hearth or copper-bearing (Beth-Cu-Loy) steel for extra corrosion resistance. Call our nearest office for more details.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. *Export Distributor:* Bethlehem Steel Export Corporation

BETHLEHEM STEEL

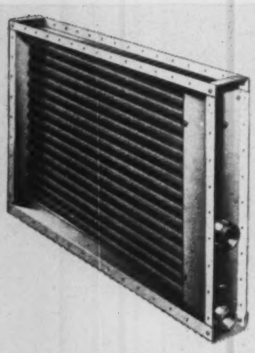
BETHLEHEM STEEL

AEROFIN CORPORATION

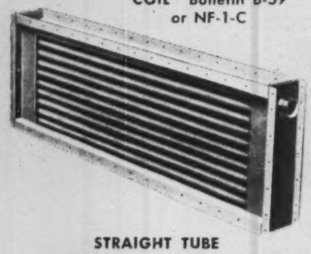
101 Greenway Avenue, Syracuse 3, N.Y.

Standardized Light-Weight Heat Exchanger Surface

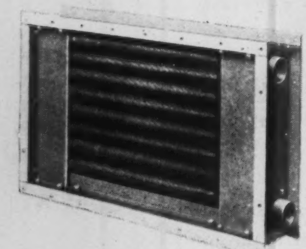
There is a factory-trained Aerofin application and service engineer located near you to give you prompt service. Write, wire or phone the factory.



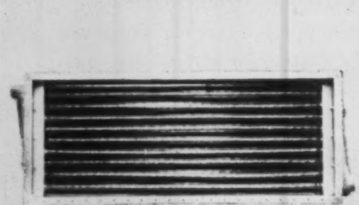
NON-FREEZE STEAM COIL Bulletin B-59 or NF-1-C



STRAIGHT TUBE BOOSTER STEAM COIL Bulletin H-45



HOT WATER BOOSTER COIL Bulletin HWB-58



UNIVERSAL STEAM COIL Bulletin H-45

Available in a wide range of sizes and types for heating, cooling, air conditioning and process, Aerofin is the modern standardized light-weight encased fan-system surface designed by *fan engineers* to meet present and future requirements of this highly specialized field.

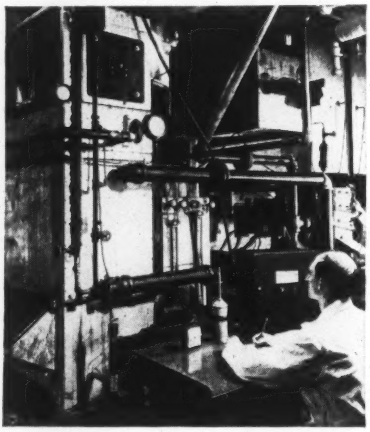
All standard Aerofin units are furnished as completely encased units, ready for pipe and duct connections. The patented casings are built of pressed steel and are exceptionally strong and rigid to protect the unit from all strains of pipe connections and expansion or contraction in service. The casings are flanged on both faces, top and bottom, and template-punched for bolting adjacent units together or for easy duct connection.

Guarantee

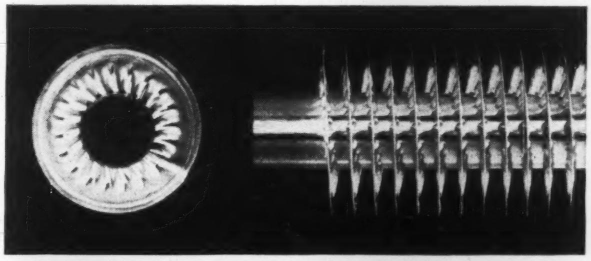
Aerofin is guaranteed, when properly installed and operated at pressures and temperatures not exceeding those specified, against failure or leakage due to faulty material or manufacture. The Aerofin Corporation will furnish a new unit, fob car Syracuse, N. Y., or Kingston, Ontario, for replacement of any unit found defective in either material or workmanship within one year from date of shipment of original unit, when such defective unit is returned to the factory at Syracuse, N. Y., or Kingston, Ontario.

Extended Surface Exclusively

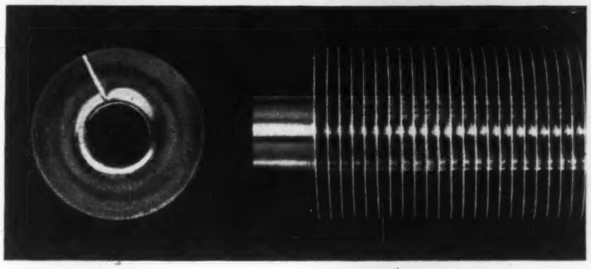
Aerofin manufactures light-weight extended-surface heat exchangers exclusively — not as a side line or accessory. Modern manufacturing, research and engineering facilities give real meaning to the Aerofin guarantee. Aerofin ratings are accurate — units may be safely installed to the full rated capacity.



Aerofin heat exchangers are rated according to accurate research laboratory test data and operate efficiently at full rated capacity.



Old Type
Aerofin Surface
with Crimped Fins



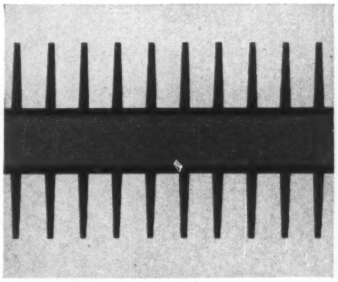
New Patented
Aerofin Surface
with Smooth Fins

Smooth-Fin Construction Provides Greater Capacity—Less Air Resistance

With air resistance and turbulence caused by the corrugations in the old-style fins now eliminated, note how many more fins can be used per inch of tube length. Note the extremely low air friction of this new design.

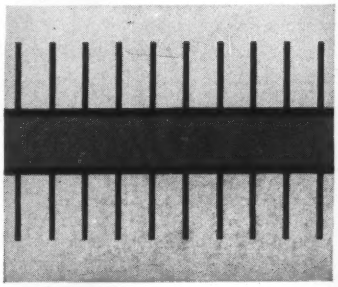
For optimum service, aluminum fins are spaced 14 fins per inch; copper, 12 fins per inch. Because of the low friction losses, high air velocities are entirely practical. This, combined with maximum heat transfer per sq ft of face area, results in extremely high heating or cooling capacity in relation to the available space.

For lower temperature differences, the tubes can be spaced on wider centers as required, or fewer rows may be used.



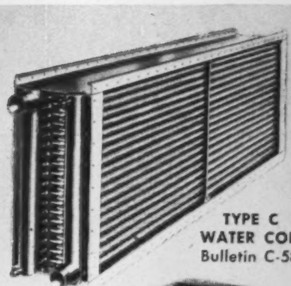
Aerofin Tapered Fin

The wide contact base of the new Aerofin tapered fin conducts sufficient heat between fin and tube to make the entire fin effective transfer surface. It is not necessary to crimp the fin to provide the required contact surface.

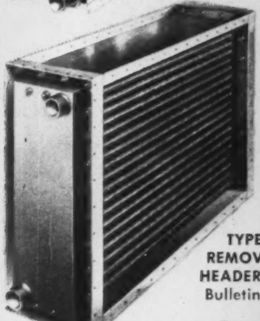


Conventional Straight Fin

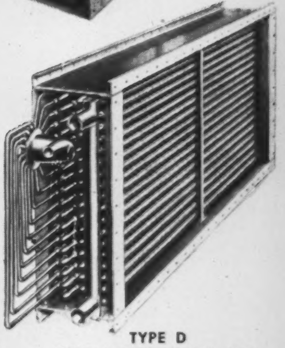
The relatively small amount of heat conducted by the small contact surface means that only a portion of the fin is effective heat transfer surface. Such fins are generally crimped to provide greater contact surface.



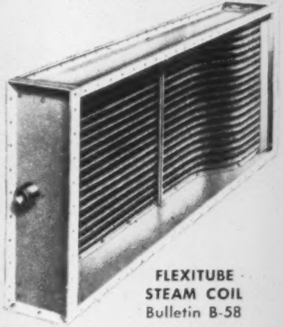
**TYPE C
WATER COIL**
Bulletin C-58



**TYPE B
REMOVABLE
HEADER COIL**
Bulletin R-50

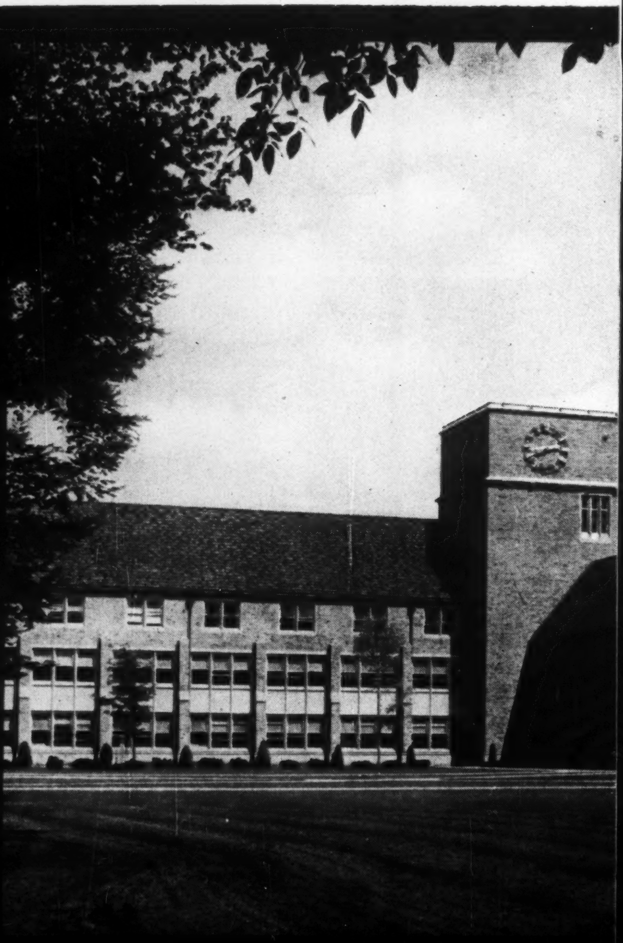


**TYPE D
DIRECT EXPANSION COIL**
Bulletin D-58



**FLEXITUBE
STEAM COIL**
Bulletin B-58

**HIGH PRESSURE STEAM
COIL** Bulletin H-45

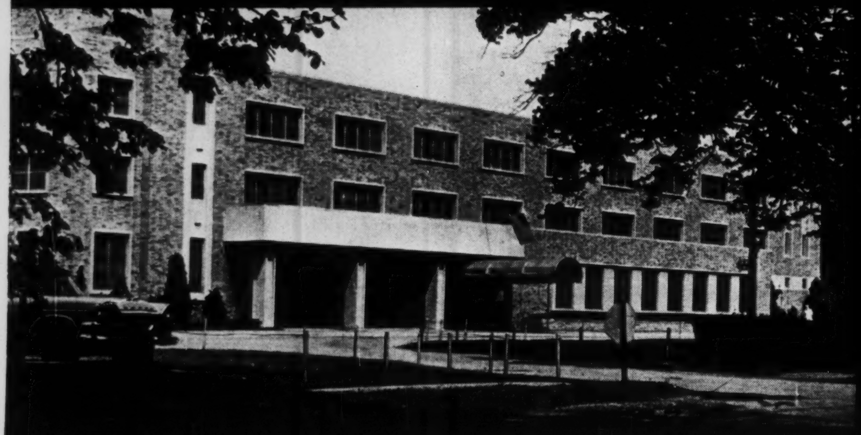


I. A. O'Shaughnessy Hall

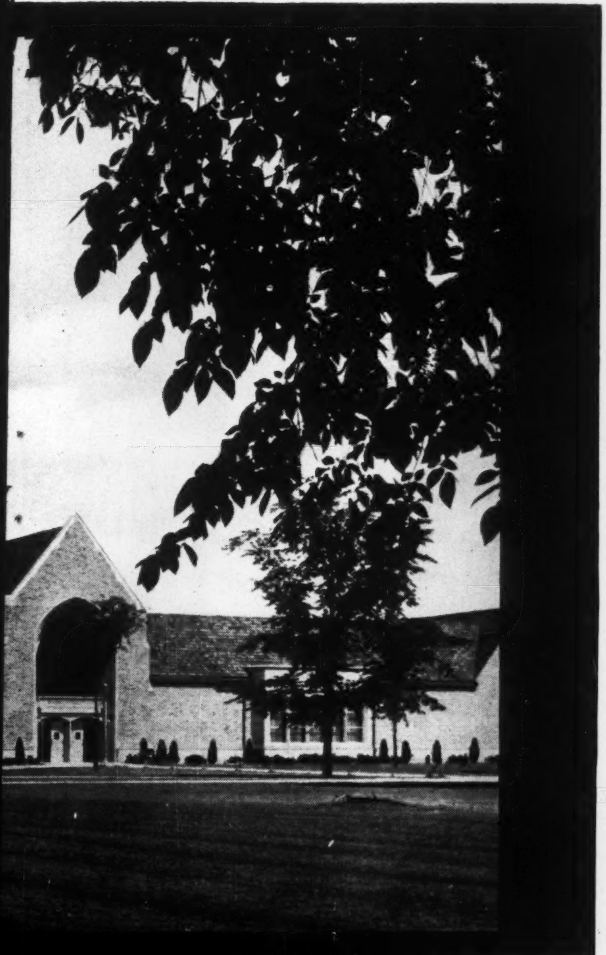
One 25-ton water chiller cools chapel
at Keenan & Stanford Halls

University of Notre Dame

Gets Economical Air Conditioning
with **Arkla-Servel** Water Chillers



Morris Inn cooled by
three 25-ton units

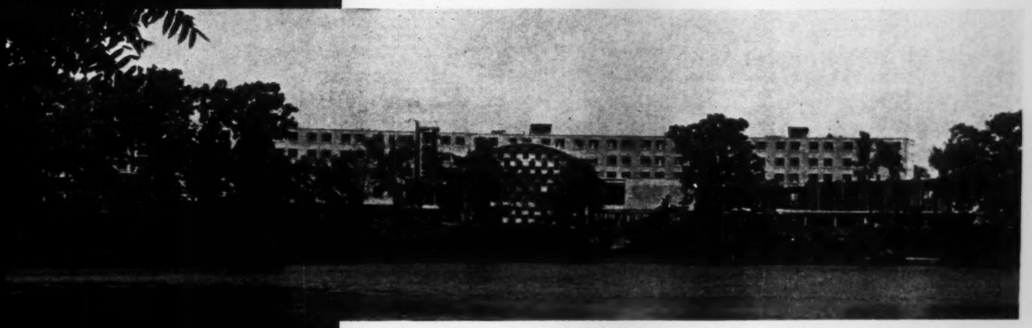


Now we're cooling with **GAS**!

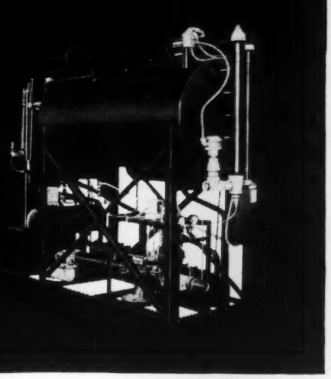
The famed home of the "Fighting Irish", University of Notre Dame recently embarked on a long-term modernization and expansion program. Up-to-date, economical air conditioning is provided by Arkla-Servel GAS-operated units.

The Arkla-Servel absorption-type water chiller guarantees long service-free life because it has no moving parts. Water is the refrigerant, and the energy source is low-pressure steam obtained from a direct-connected gas boiler which is also used for heating. During hot weather, low pressure steam applied to the chiller produces all the comfort cooling needed. Seasonally idle or excess boiler capacity is thus put to use on a year 'round basis, cutting operating costs to a minimum.

Because of its light floor loading and freedom from vibration, single or multiple Arkla-Servel units can be installed on any floor from basement to roof. Find out how you too can put your present heating system on a year 'round paying basis. Just call your local gas company for details, or write to the Arkla Air Conditioning Corporation, General Sales Offices, 812 Main Street, Little Rock, Ark. *American Gas Association.*

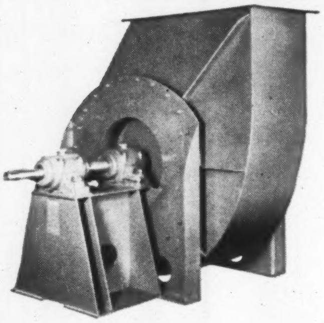


New Moreau Seminary

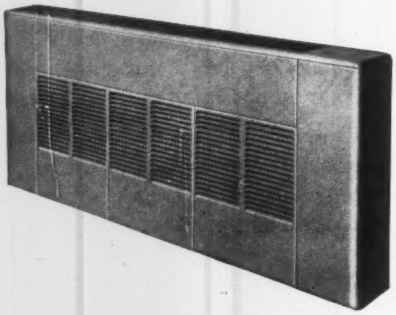


GAS OPERATED ARKLA-SERVEL ABSORPTION-TYPE WATER CHILLER

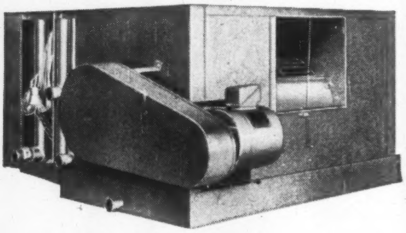
- lowest operating costs
- fully automatic operation
- long dependable service
- packaged construction
- compact size; easy installation



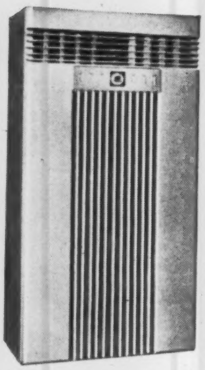
High-Pressure Fans are part of the complete American Blower package for high-velocity, high-pressure air-handling systems.



Planning a peripheral system? Compact American Blower Inductor Units can be mounted vertically or horizontally.

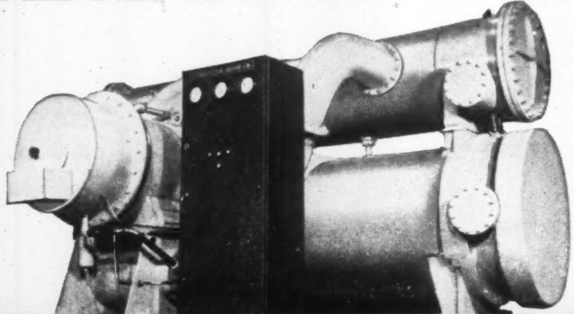


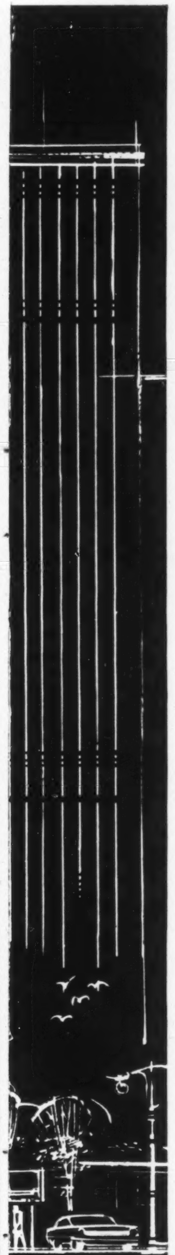
American Blower Type A Conditioners provide control of summer cooling and winter heating for central-station air-conditioning systems.



Air or water cooled American Blower Packaged Air Conditioners are self-contained units that cool, filter, dehumidify, circulate. For stores, showrooms, factories. Complete range of sizes.

Planning a central-station system? American Blower Tonrac® Centrifugal Refrigerating Machines maintain constant chilled-water temperature regardless of load. One-level construction saves weight, space, installation costs.





Here's how you benefit when you select all your air-conditioning components from American Blower's complete line:

American Blower cooling, heating, air-handling and air-conditioning products are designed, engineered, manufactured to work together!

When choosing air-conditioning equipment — for a large-scale central or zone system, or a system for a smaller store, showroom or industrial plant — it pays to select from one source. A single source pinpoints responsibility for quality, performance, delivery dates . . . saves time and money.

Complete line fits all requirements

The components shown opposite are only a few of the complete line of American Blower quality air-conditioning products, designed, engineered and manufactured to work together. Refrigerating machines, heating and cooling coils, central-station air-conditioning units, multi-zone conditioners, inductor units, sprayed-coil dehumidifiers, self-contained air conditioners, heavy-duty fans, equipment for heating, cooling, dehumidifying . . . whatever your needs, specify American Blower for undivided responsibility!

Expert service before, during and after the sale

The more than 300 skilled American Blower factory and sales engineers in all parts of the country are at your service. Each has the know-how and experience to help you select and apply the exact American Blower equipment you need. And what's more, they'll follow-through during and after the installation to ensure your satisfaction.

Performance-proved by 77 years' experience

American Blower's 77 years' experience as a leading producer of air-conditioning, air-handling, cooling and heating products is your guarantee of a successful installation every time, and your client's assurance of years of trouble-free air conditioning. American Blower products have proved dependable in thousands of important installations in all parts of the world.

Get in touch with our nearest branch office for full information, or write: American-Standard,* American Blower Division, Detroit 32, Mich. In Canada: Canadian Sirocco products, Windsor, Ont.

See our exhibit, Booths 44, 46 and 48, at the 14th International Heating and Air Conditioning Exposition, Convention Hall, Philadelphia, Pa., January 26-29, 1959.

*American-Standard and Standard ® are trademarks of American Radiator & Standard Sanitary Corporation.

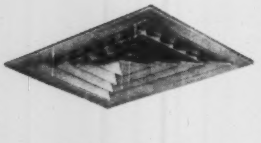
American-Standard Products

AMERICAN-STANDARD

AMERICAN BLOWER DIVISION

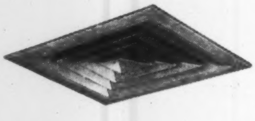
YOU GET TOP PERFORMANCE IN AIR HANDLING

AGITAIR® products provide an extensive selection of air diffusers, filters and exhausters to meet all requirements for correct air distribution, better air filtration and efficient low cost ventilation. Each Agitair item has distinctive, practical performance characteristics to assure the desired results—BETTER AIR.



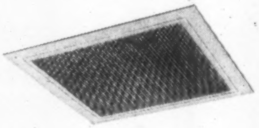
TYPE RC SERIES

With separate mounting frames in three styles; and interchangeable core with built-in diffusing vanes. Patterns unlimited!



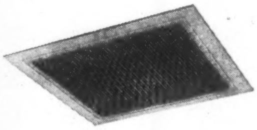
TYPE MR SERIES

These return or exhaust units are made in the same pattern design to match RC supply diffusers.



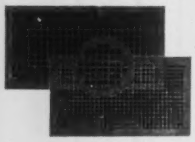
PERFAIR SERIES

Perforated face diffusers to simulate ceiling tiles. Separate mounting frames and interchangeable diffusing cores.



PERFAIR RETURN UNITS

These return or exhaust units are available in same design and size to match Perfair supply diffusers.

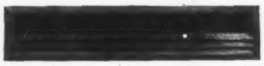


PLAIN LATTICE GRILLES

Available in satin bronze, brass and aluminum. Also plated finishes on steel.

CIRCULAR DIFFUSERS

Adjustable or non-adjustable. Air adjustments are made after installation without disturbing spinning.

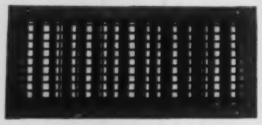


CONTINUOUS DIFFUSERS

Made with separate mounting frames and removable core. Available in various lengths.

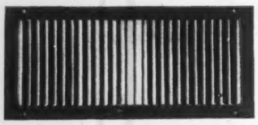
STRIPLINE DIFFUSERS

Slot type diffusers are available in three types for installation in any location with horizontal or vertical up or down blow.



REGISTERS

A wide selection of types and styles to meet all requirements. Made of all aluminum, all stainless or all bronze. Finish thoroughly baked on hard. Will not chip.

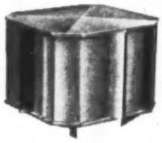


GRILLES

The craftsmanship, distinctive styling and finish of these grilles and registers meet every requirement of the architect and designer.

FILTERS

Available in three types for high velocity—low velocity and grease filters for kitchen canopies. All metal, rugged construction, permanent, cleanable.

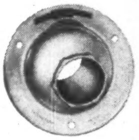


EXHAUSTERS

Ruggedly constructed of galvanized steel. Recommended for industrial and commercial low cost ventilation. No moving parts—no maintenance once installed.

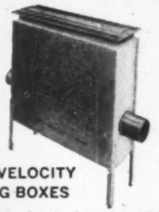
DISTINCTIVE QUALITY PRODUCTS...

WITH THESE JOB-PROVEN PRODUCTS



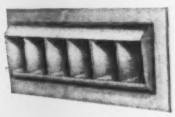
ROUND PUNKAH LOUVRES

Recommended for any spot cooling or heating problem. Ideally used for air distribution in remote areas where branch ducts cannot be accommodated.



HIGH VELOCITY MIXING BOXES

Available in perimeter and ceiling types with new CON-VOL feature which assures constant volume to meet all requirements.



DROTUM PUNKAH LOUVRES

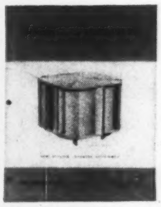
Used for extremely long blows of air in large areas of any enclosure. Can be installed in vertical or horizontal position. Rotating drum feature controls length of throw and direction.

THERMOTANK® engineers originated high velocity systems for comfort air conditioning. The products illustrated represent a few of the many types designed to provide top performance in cooling, heating and ventilating systems. Thousands of these THERMOTANK products are field-proven in a variety of applications requiring special techniques for handling air at high speeds through small ducts.

LIBRARY OF ENGINEERING DATA

To assist you in your selecting and sizing of the THERMOTANK-AGITAIR unit best suited for your job condition, Air Devices Inc. has available a complete Library of Engineering Data. Ask your local Air Devices Inc. representative for these catalogs or write direct to Air Devices Inc., New York City.

SQUARE
RECTANGULAR
& CONTINUOUS
AIR DIFFUSERS



registers
grilles
scoops
a complete line by
AGITAIR

punkah louvres

AGITAIR
AIR FILTERS
AIR DEVICES INC.

THERMOTANK — AGITAIR

high velocity units • punkah louvres
air diffusers • filters • exhausters
registers and grilles

Sold exclusively by representatives for:

AIR DEVICES INC.

185 MADISON AVENUE, New York 16, N. Y.

ENGINEERED FOR—BETTER AIR

Bituminous Coal..

SECTION F-1

BCI **Fuel Engineering Data**

FUEL ENGINEERING HANDBOOK

CLEANING FIRE AND RESTORING FUEL BED ON UNDERFEED STOKERS

BCI

GUIDE SPECIFICATIONS GS-1

UNDERFEED STOKER FIRED
LOW PRESSURE
HEATING PLANTS

LOW PRESSURE HEATING PLANT

BCI **News Notes** BCI

BCI ADVISORY COMMITTEE MANUAL

New College Heating Plant Switches to BCI Coal-Pak Units

Technical Services for Better

PLANT DESIGN ●
EQUIPMENT ●
COAL UTILIZATION ●

BCI BITUMINOUS COAL INSTITUTE • WASHINGTON 5, D. C.

RECOMMENDED
BOILER ROOM PLANS
FOR MODERN COAL

SHINGTON
OREGON
12
NEVADA
ARIZO

Shown are just some of the publications available from BCI. Data include diagrams and designs, case histories, current fuel developments, plant specifications, etc.

Bituminous Coal Institute provides a nationwide service for men who influence the selection of fuel and fuel-burning equipment for new or remodeled power plants. This service involves engineering design, fuel cost surveys, equipment costs and other pertinent information.

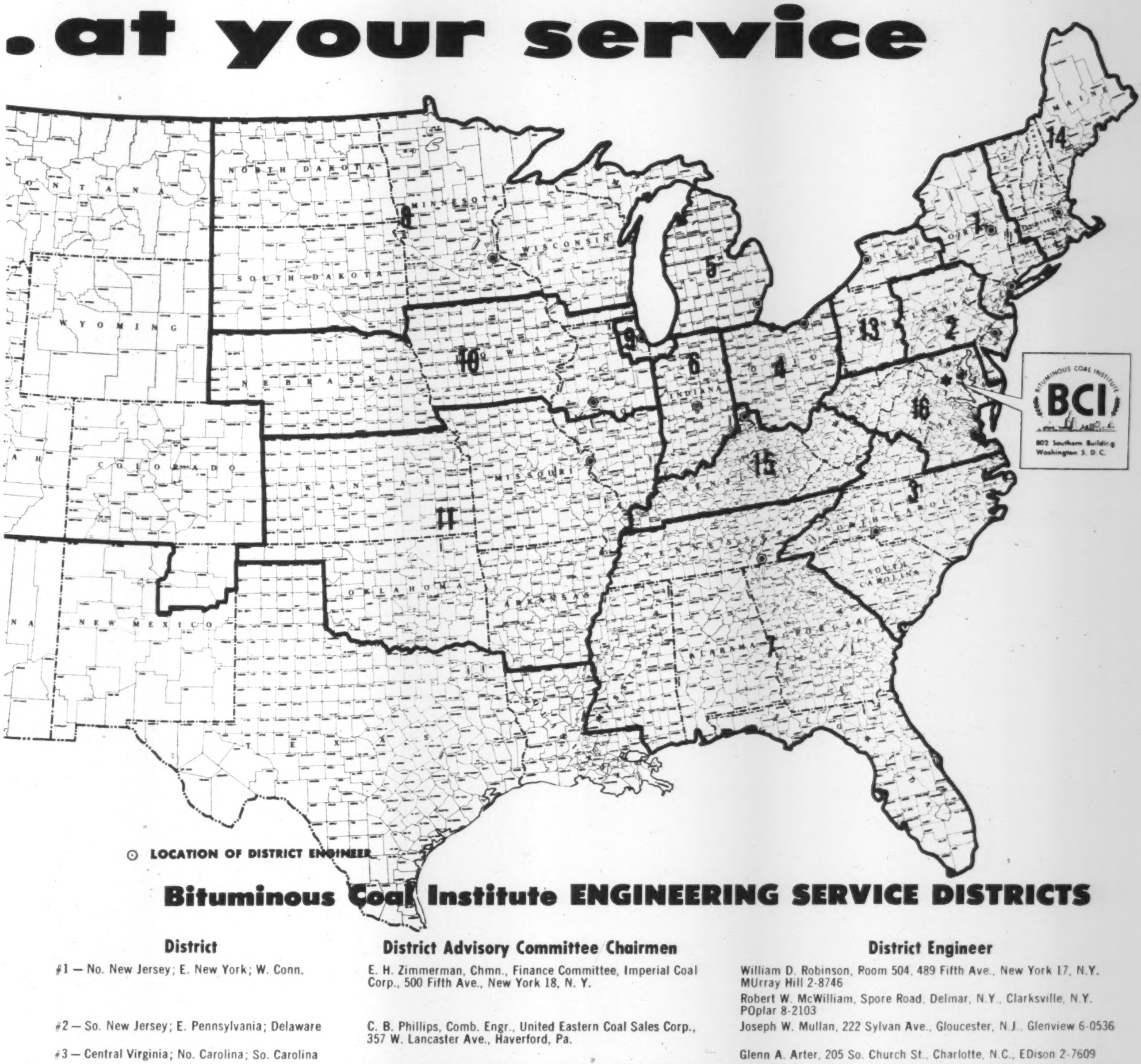
Competent representatives are strategically located throughout coal-burning states, as indicated on the map at right. These BCI men, thoroughly familiar with their districts, work from a strictly engineering viewpoint to assist in selecting the fuel best suited for individual installations on the basis of economy and efficiency.

If you can use any of the literature shown above—or require the personal services of our representatives—the Bituminous Coal Institute invites your inquiry.

Bituminous Coal Institute

Dept. HP-01, Southern Building, Washington 5, D. C.

. at your service


MAINE
14
7
NEW YORK
13
2
16
3
NORTH CAROLINA
SOUTH CAROLINA
GEORGIA
FLORIDA
ALABAMA
TENNESSEE
15
KENTUCKY
4
OHIO
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INDIANA
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9
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MINNESOTA
WISCONSIN
NORTH DAKOTA
SOUTH DAKOTA
10
IOWA
NEBRASKA
11
MISSOURI
KANSAS
OKLAHOMA
ARKANSAS
TEXAS
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#11 — South Illinois; Missouri; Kansas; Oklahoma; Arkansas	L. C. Sherrill, Vice Pres., United Electric Coal Co., Ambassador Bldg., St. Louis, Mo.	Howard J. Scott, 496 Arcade Bldg., 812 Olive St., St. Louis, Mo., MAin 1-8220
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#13 — West New York; West Pennsylvania		Thomas G. Healy, 6106 Greenvale Pkwy., Riverdale, Md., UNion 4-9066
#14 — East Connecticut; Massachusetts; Rhode Island; New Hampshire; Vermont; Maine	R. B. Chase, Vice Pres., New England Coal & Coke Co., 250 Stuart St., Boston, Mass.	Herbert R. Karcher, 72 Lincoln St., Melrose 76, Mass., NOrmandy 5-7860
#15 — Kentucky; Southwest Virginia; South West Virginia; Cincinnati, Ohio		Wilbur C. Helt, 707 Myrtle Ave., Terrace Park, Ohio, TErrace 1-2163
#16 — Maryland; District of Columbia; North West Virginia; North Virginia		Frank Holland, 35 Boone Ave., Linstead, Severna Park, Md. Severna Park 1470

TRANE ANNOUNCES

new compressor design...for R-22 or R-12 and air condensing!

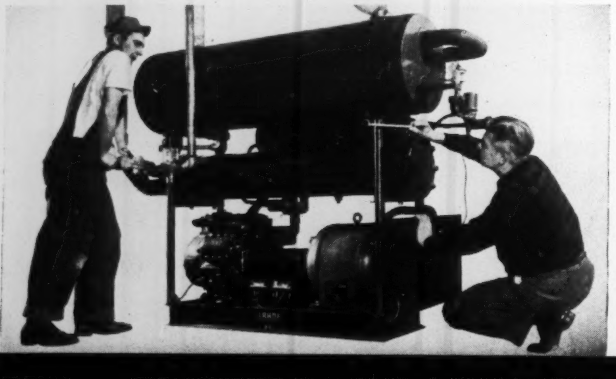
8 exclusive design features assure easy servicing, increased dependability and smoother operation

Here's the biggest advance in compressor design in years! It's the TRANE Reciprocating Compressor—the only unit especially designed for use with either R-22 or R-12 refrigerant. Available with air condensing, it has many new, exclusive features that increase its dependability and operating smoothness. Heart of the famous TRANE Cold Generator and TRANE heavy duty Self-Contained Air Conditioners, this is the same outstanding compressor that has been recognized as a leader in the field—and now it is better than ever! Here are some of the advanced design features:

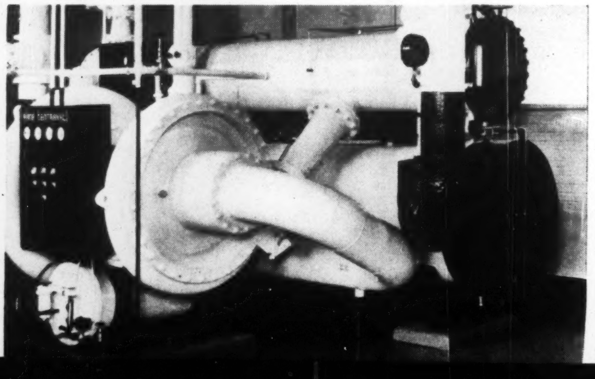
- **Designed for R-22**—Compressor specifically designed for the higher operating pressures of R-22.
- **Higher condensing temperatures**—up to 140° F. with R-22, or 150° F. with R-12. Available with air or water condensing.
- **Every part accessible**—quickly, easily. Even the valves, strainer and cylinder liners are easily accessible. Entire compressor can be disassembled, if necessary.
- **Slugging problem reduced**—Large suction chamber and cylinder head safety springs protect the discharge valves in case of oil or liquid slugging.
- **Improved lubrication**—Extra large oil pump, with two forced-feed crankshaft lines. Centrifuge action and three magnetic plugs insure cleanliness.
- **New valves**—Exclusive super-hard valve plating for longer wear; does not absorb and hold dirt.
- **Simplified construction**—Staggered cylinders; fewer bolts, gaskets and parts. All internal parts except crankshafts are interchangeable.
- **Less starting and stopping**—Multi-step capacity control reduces starting, stopping, saving in power cost, adding years of life.

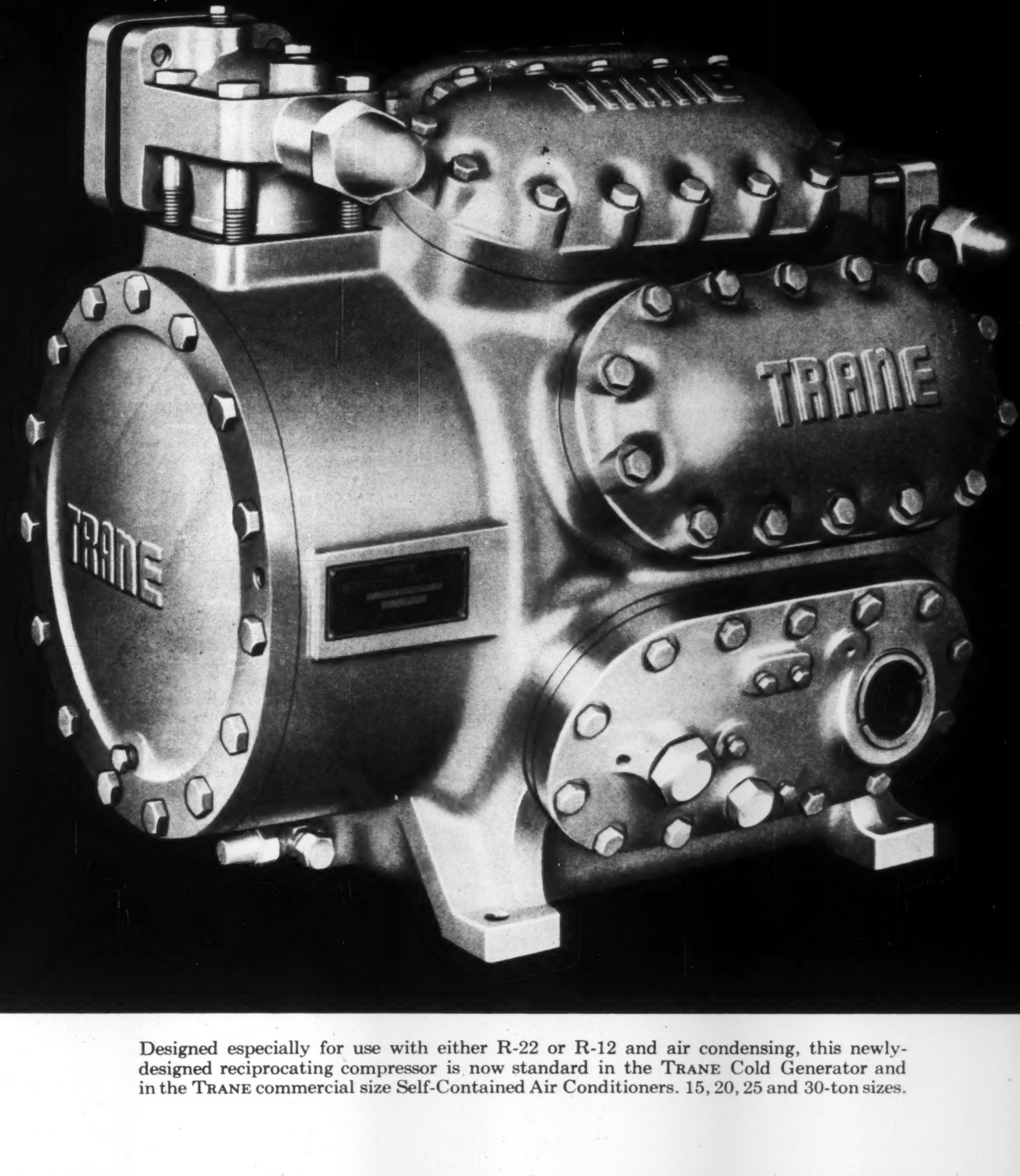
Next time you're planning an air conditioning job, call on TRANE for the refrigeration equipment you need. A nationwide sales and service organization is available to help you choose the units that are right for the job.
Call your nearby TRANE Sales Office—or write TRANE, La Crosse, Wisconsin.

TRANE Cold Generator provides a packaged water chiller in sizes to 150 tons. 4-step compressor modulation cuts power consumption. Complete factory pre-assembly, including automatic control panel, cuts installation time and cost.



CenTraVac Water Chiller now available in steam driven models—open or hermetic design. Hermetic electric type automatically modulates to 10% of capacity—or lower—with power savings in almost direct proportion to load.





Designed especially for use with either R-22 or R-12 and air condensing, this newly-designed reciprocating compressor is now standard in the TRANE Cold Generator and in the TRANE commercial size Self-Contained Air Conditioners. 15, 20, 25 and 30-ton sizes.

Self-Contained Air Conditioners may be installed within or outside conditioned zone. 3, 5, 7, 10 and 15-ton capacities in deluxe models; 10, 15, 20, 25 and 30-ton commercial models (illustrated)—all available with air or water cooling.

For any air condition, turn to

TRANE

MANUFACTURING ENGINEERS OF AIR
CONDITIONING, HEATING, VENTILATING
AND HEAT TRANSFER EQUIPMENT

THE TRANE COMPANY, LA CROSSE, WIS. • SCRANTON MFG. DIV., SCRANTON, PA
• CLARKSVILLE MFG. DIV., CLARKSVILLE, TENN. • TRANE COMPANY OF CANADA,
LIMITED TORONTO • 97 U. S. AND 19 CANADIAN OFFICES

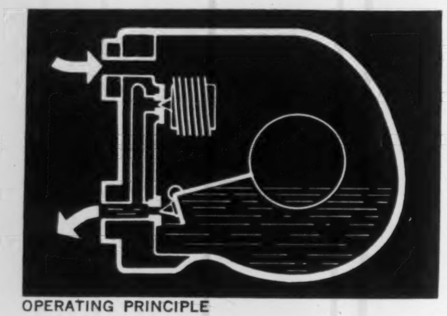
To help you select the right steam trap . . .

Here's a functional comparison of

FLOAT-THERMOSTATIC and INVERTED BUCKET types

In specifying any steam trap it is important to make certain that the type selected will do the job for which it is intended. Occasionally, the design and operation of Inverted Bucket and Float-Thermostatic steam traps are confused. Since Sarco makes both types, in addition to the three other forms of steam traps, we feel qualified to offer the comparisons which follow.

This is a FLOAT-THERMOSTATIC TRAP



OPERATING PRINCIPLE

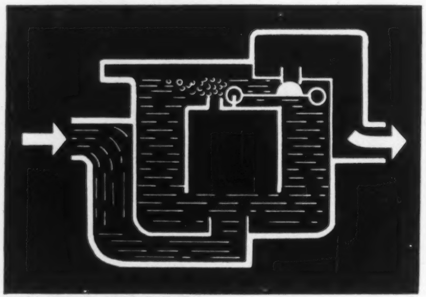
When a specifying engineer specifies a float-thermostatic steam trap, he is clearly calling for a definite, recognized, specific construction and type of operation:

1. A *sealed float* operating the condensate discharge valve; and

2. A *balanced-pressure thermostatic air vent*, controlling a separate discharge port, solely for the release of air and gases. Such an air vent fully discharges starting air and also air at temperatures approaching that of steam, regardless of pressure.

Such a trap discharges condensate continuously at a rate varying directly with the rate of steam consumption. This is why the "F & T" is first choice for applications such as unit heaters, blast heaters, air heating coils and heat exchangers.

This is an INVERTED BUCKET TRAP



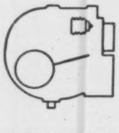
OPERATING PRINCIPLE

Condensate is controlled by a valve operated by the sinking of an inverted bucket. When filled with steam or air the bucket floats in a water seal and the valve is closed. Air and/or steam escapes through a vent hole in the top of the bucket; the bucket loses buoyancy and opens the valve. Steam follows, filling the bucket, re-closing the valve.

In the inverted bucket trap (sometimes called the "open float" trap) air is discharged only after passing through the hole in the top of the bucket, then through the valve seat. A bi-metallic air vent can be fitted in the bucket, allowing freer air flow on start-up. Or the air vent may control a by-pass valve around the main valve. Either way, the vent is effective only at temperatures up to approximately 200°F.; this kind of vent is not self-adjusting for varying steam pressures. The trap closes with a bucket of steam; on each discharge, a bucketful of steam is lost.

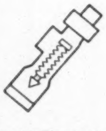
8114B

On every problem that needs production planned *steam trapping, you can rely on impartial advice from Sarco, because only Sarco makes all 5 types of traps.*

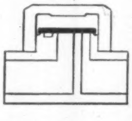


Float-Thermostatic

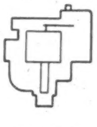
Thermostatic



Liquid Expansion



Thermo-Dynamic®



Inverted Bucket

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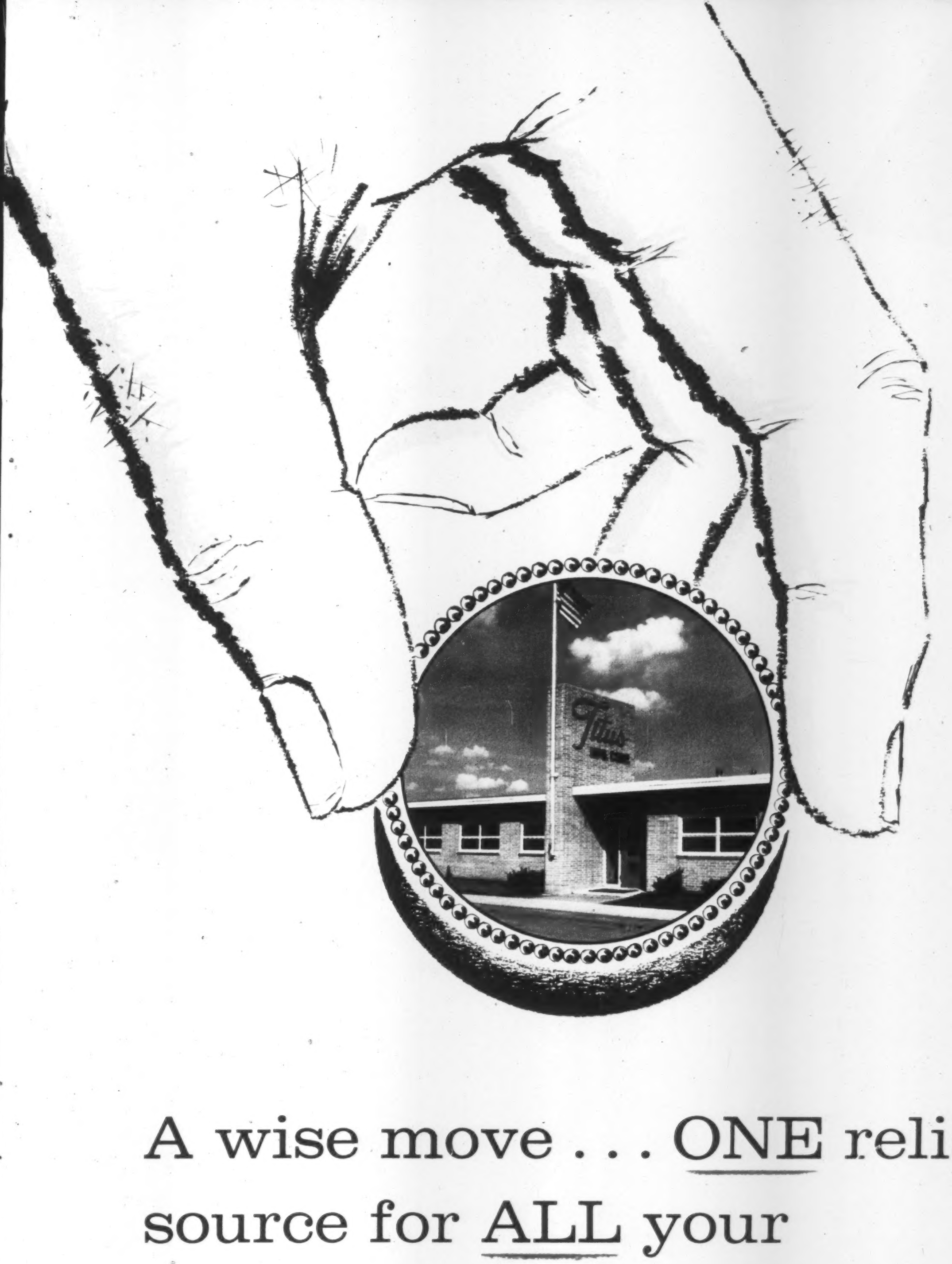
STEAM TRAPS • TEMPERATURE CONTROLLERS • STRAINERS • HEATING SPECIALTIES



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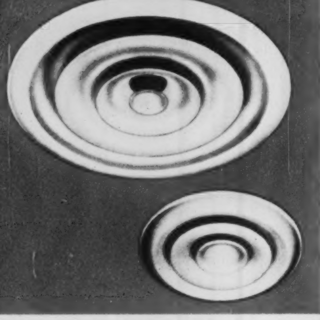
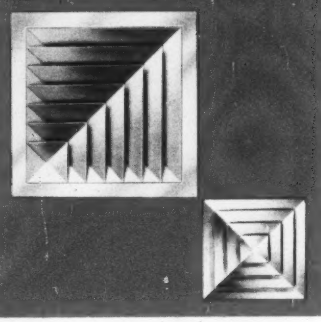


ROUND CEILING DIFFUSERS

All types—fixed cone, fully adjustable—in all sizes. Exposed ductwork or flush mounting.

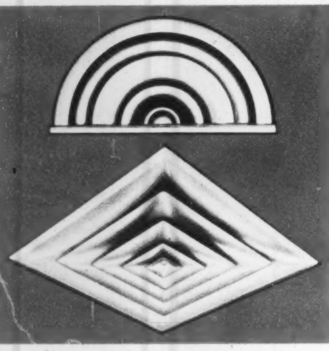


SERIES TMD SQUARE AIR DIFFUSERS

Available 2 basic types: One-piece units—or two-piece units with mounting frame and removable core. 1, 2, 3 & 4-way air patterns. Unlimited core styles.

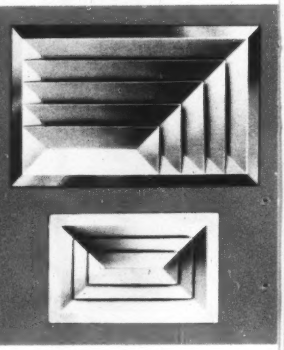
HALF ROUND AND SQUARE CEILING DIFFUSERS

All standard sizes to fit every type job. Exposed ductwork or flush mounting. Full line of accessories.



SERIES TMD RECTANGULAR AIR DIFFUSERS

Available 2 basic types: One-piece units—or two-piece units with mounting frame and removable core. 1, 2, 3 & 4-way air patterns. Unlimited core styles.



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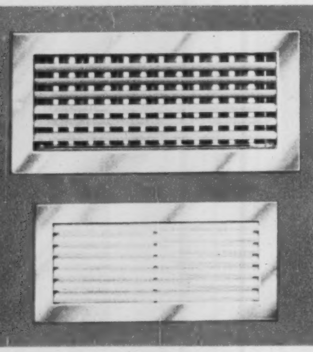
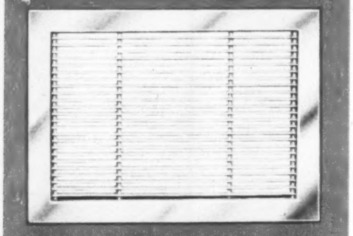


SIDEWALL SUPPLY-RETURN GRILLES & REGISTERS

All standard sizes. Full line of accessories including dampers of all types. Adjustable, solid section aluminum airfoil louvers on supply outlets.

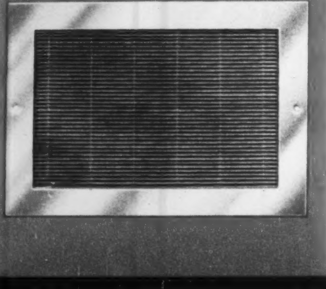


GYMNASIUM GRILLES

Designed to take extra rugged gym use. 14-gauge, round edged steel blades. 2 Models G-1 (grille face only) and G-2 (grille face with volume controller).

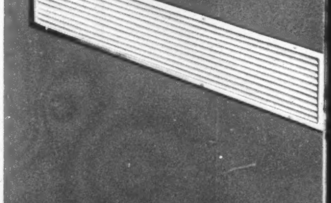
DOOR GRILLES

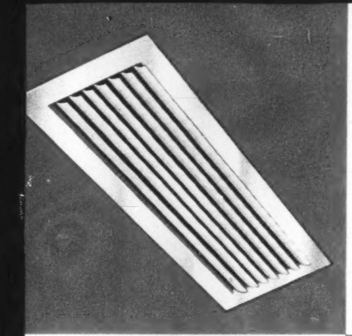
5 Models. Channel type and flange type frames —or available core only. All standard sizes.



CONVECTOR GRILLES

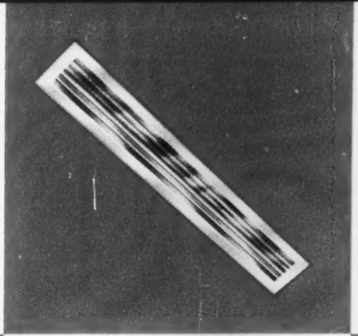
Extruded aluminum. Available in all widths— continuous lengths. Withstand rugged use. Full line of accessories.





SERIES 200 1-WAY DEFLECTION CEILING AND SIDEWALL GRILLES

Individually adjustable Titus Airfoil louvers. 2 models—L-201 (louvers parallel long dimension). S-201 (louvers parallel short dimension). All sizes.

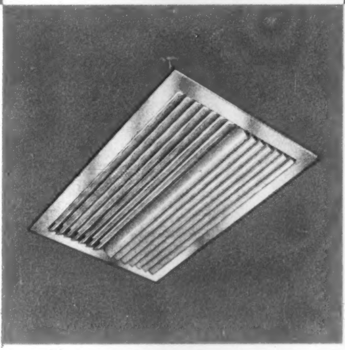


SLIM LINE TYPE CEILING AND SIDEWALL GRILLES

Extruded aluminum. Two models: C-2700 (1-way deflection) and C-2800 (2-way deflection). Complete line of accessories.

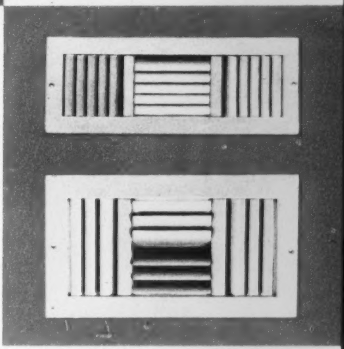
SERIES 200 2-WAY DEFLECTION CEILING AND SIDEWALL GRILLES

Individually adjustable Titus Airfoil louvers. 2 models—L-202 (louvers parallel long dimension). S-202 (louvers parallel short dimension). All sizes.



SERIES 200 3 & 4-WAY DEFLECTION CEILING AND SIDEWALL GRILLES

Individually adjustable Titus Airfoil louvers. Grilles available all standard sizes. Full line of accessories.



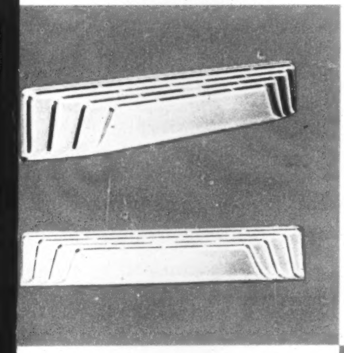
. . . straight across the board

A real first in air conditioning history! **Now** you can specify all your grilles — registers and diffusers from **ONE REALLY RELIABLE SOURCE** — and be absolutely sure you are getting the most modern, most efficient equipment money can buy.

By using one source — **TITUS** — everyone from architect, engineer to building occupant benefits. One source means one responsibility — quicker, more accurate delivery of orders.

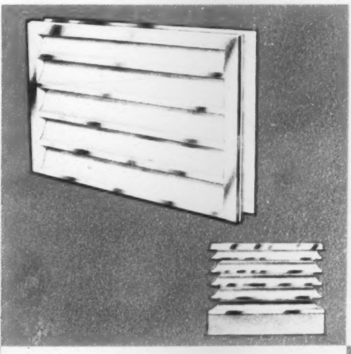
And Titus' large, complete line eliminates any need to compromise in grille selection. You can select the **exact** diffuser to fit the job.

Make the move that'll make you more money — **SPECIFY THE ONE COMPLETE SOURCE — TITUS!**



Adjustable for Heating
Adjustable for Cooling
PERIMETER DIFFUSERS

24" in length. 2 models: P-125 (fully adjustable for heating and cooling). P-75 (economy model with damper adjustment only).

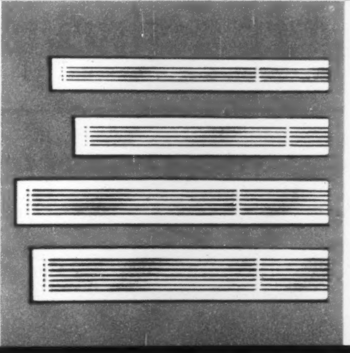


OUTSIDE LOUVERS AND PENTHOUSES

A complete line extruded auminum and sheet metal models. 2" and 4" louvers.

LINEAR-TYPE AIR DIFFUSING GRILLES

Extruded aluminum. 6 standard widths. 2 models—C-2500 (front louvers fixed 0° deflection). C-2615 (front louvers fixed 15° deflection).



PLUS . . . **a complete line of standard and custom made EXTRUDED ALUMINUM GRILLES AND REGISTERS.**

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TITUS grilles registers diffusers

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THE PRUDENTIAL LIFE INS. BLDG.
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Houston, Texas
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U. S. AIR FORCE ACADEMY
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CARILLON HOTEL
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Westinghouse q|s|p* air conditioning has real meaning for buyers . . . specifiers . . . and installers alike! On your next air conditioning requirement—packaged or applied—better call Westinghouse!

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Acme components for built-up systems have long been recognized as the best available. All major manufacturers of refrigeration equipment have used Acme components for many years.

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A complete range of sizes and capacities for almost every OEM, built-up system and replacement need.

✓ See the complete Acme line at *Booth* 508 14th International Heating and Air Conditioning Exposition, Convention Hall, Philadelphia,

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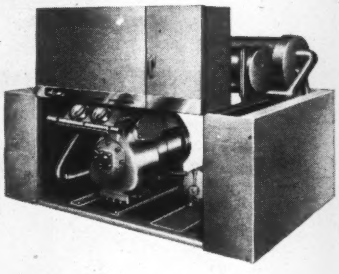
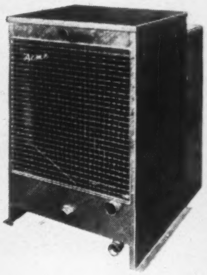
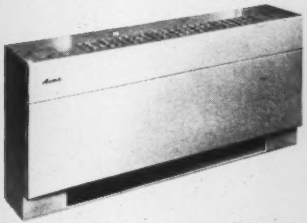


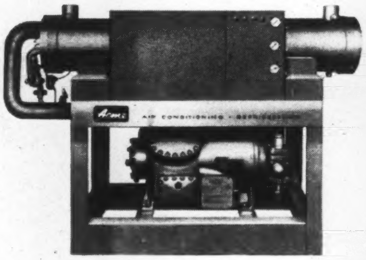
Flow Cold packaged water chillers—
3 through 30 tons



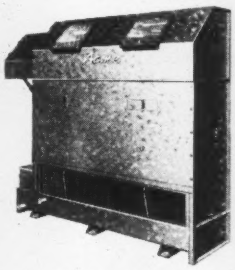
Flow Cold cooling towers—
3 through 20 tons



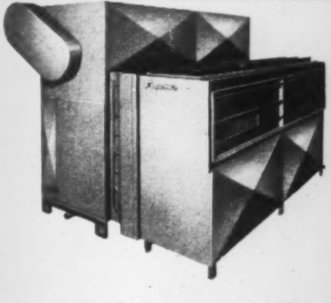
Remote room conditioners—
4 types in 16 models
from 200-600 cfm



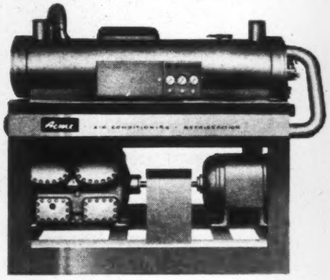
Model HE Flow Therm
packaged water chillers—
20 through 60 tons



Flow Mizer cooling towers—
20 through 175 tons

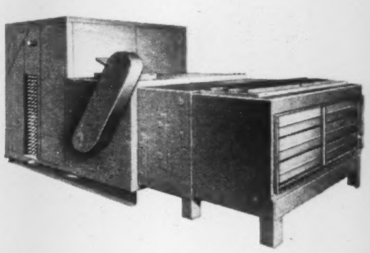


Air handlers—4 types in 40
models from 665 to 19,200 cfm



Model DE Flow Therm
packaged water chillers—
20 through 125 tons

Flow Mizer evaporative
condensers—
Capacities to 200 tons



Multi-zone air conditioners—
5 models from 4,060 to 19,200 cfm

SELF CONTAINED SYSTEMS

Self contained packaged
air conditioners—5 models
from 3 to 15 tons, air or
water cooled

Self contained packaged air
conditioners—24 models from 20 to 60
tons, air or water cooled

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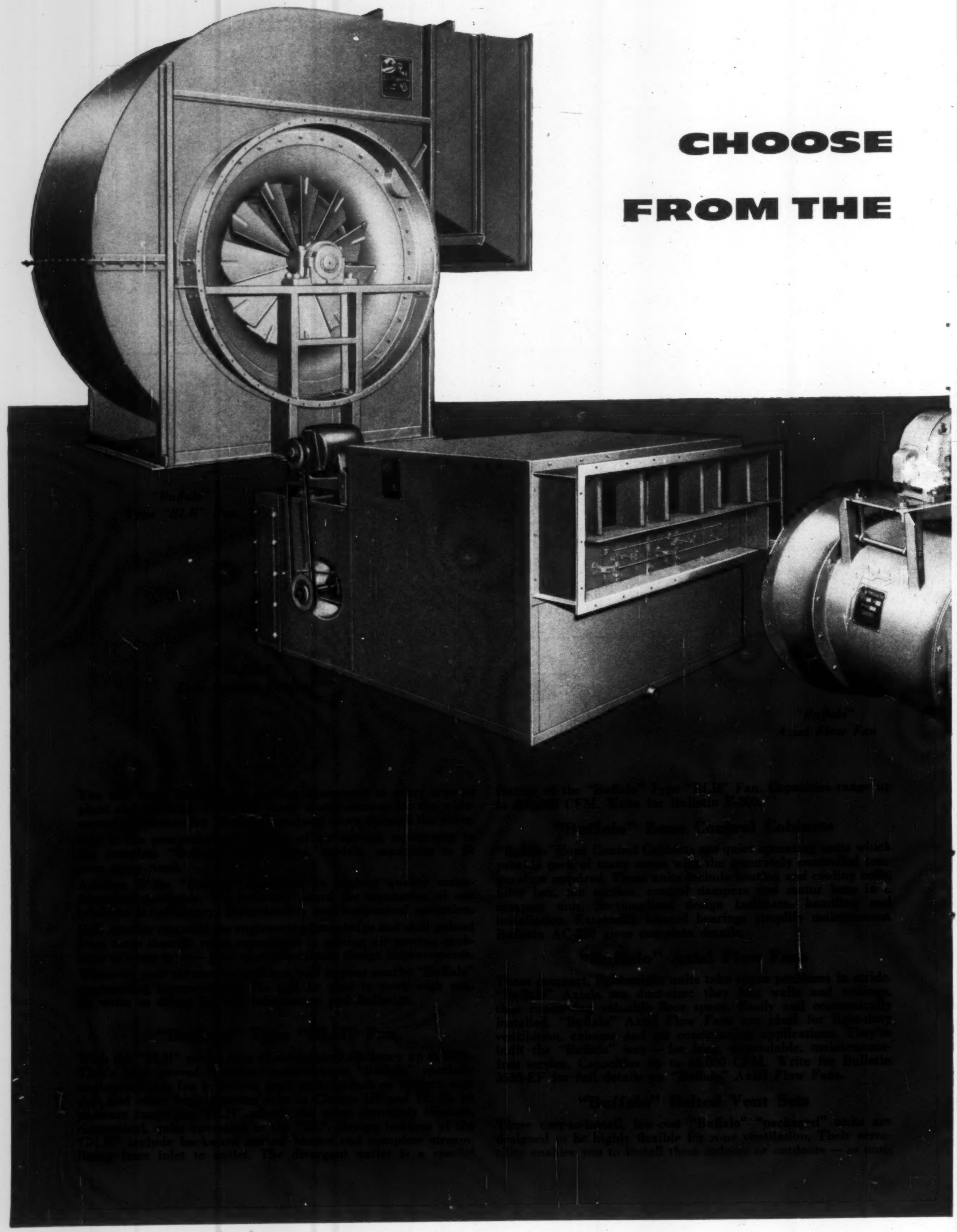


"Buffalo" Type "BLH" Fan

"Buffalo" Axial Flow Fan

You will [illegible] equipment to every type of plant [illegible] the wide [illegible] the years [illegible] is this comprehensive [illegible] of the leading manufacturer in the complete [illegible] capacities to fit your every need.

Added to the [illegible] high quality materials [illegible] the maximum of efficient air handling, dependability and economical operation. [illegible] the engineering knowledge and skill gained [illegible] experience in solving air moving problems [illegible] design improvements. Whatever your air moving needs, [illegible] your nearby "Buffalo" [illegible] will be glad to work with you, or write us [illegible] bulletins.

"Buffalo" Type "BLH" Fan

With the "BLH" you [illegible] efficiency up to [illegible] proved [illegible] "Buffalo" [illegible] fan [illegible] and other [illegible] pressure range, the "BLH" [illegible] economical, quiet operation [illegible] Design features of the "BLH" include backward curved blades and complete streamlining from inlet to outlet. The divergent outlet is a special feature of the "Buffalo" Type "BLH" Fan. Capacities range up to [illegible] CFM. Write for Bulletin F-200.

"Buffalo" Zone Control Cabinets

"Buffalo" Zone Control Cabinets are quiet operating units which provide each of many zones with the accurately controlled temperature required. These units include heating and cooling coils, filter box, fan section, control dampers and motor base in a compact unit. Sectionalized design facilitates handling and installation. Externally located bearings simplify maintenance. Bulletin AC-200 gives complete details.

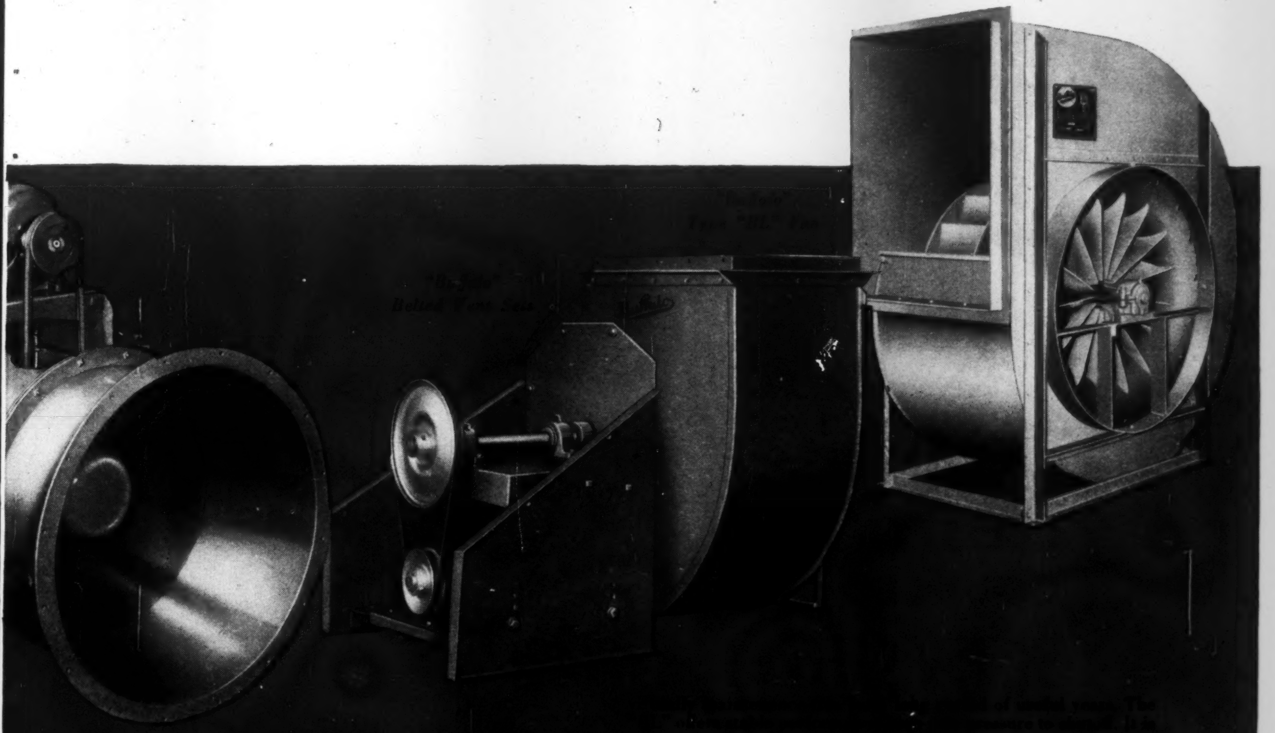
"Buffalo" Axial Flow Fans

These compact, lightweight units take space problems in stride. "Buffalo" Axials are duct-size; they hug walls and ceilings, thus conserving valuable floor space. Easily and economically installed, "Buffalo" Axial Flow Fans are ideal for light-duty ventilation, exhaust and air conditioning applications. They're built the "Buffalo" way — for long, dependable, maintenance-free service. Capacities up to 65,000 CFM. Write for Bulletin 3533-EF for full details on "Buffalo" Axial Flow Fans.

"Buffalo" Belted Vent Sets

These easy-to-install, low-cost "Buffalo" "packaged" units are designed to be highly flexible for zone ventilation. Their versatility enables you to install them indoors or outdoors — as mult

THE EQUIPMENT YOU NEED
COMPLETE "BUFFALO" LINE!



[illegible] units, or separately to meet increased ventilating [illegible]. "Buffalo" Belted Vent Sets are extremely quiet, very efficient and non-overloading. Available in capacities [illegible] CFM. Adding to their unusual versatility, [illegible] unit is easily adjustable by merely changing [illegible] can be readily adapted to your future needs [illegible] plant ventilation to match your specific needs [illegible] investigate "Buffalo" Belted Vent Sets. Write for Bulletin [illegible].

"Buffalo" Type "BL" Fan

To supply air for large systems in Classes [illegible] and [illegible] engineers select the "BL". This fan is specifically designed to handle moderate pressure requirements for [illegible] conditioning and air cleaning systems. The "Buffalo" Type "BL" provides the utmost in quiet, efficient, dependable [illegible] the [illegible] of useful years. The "BL" [illegible] pressure to [illegible]. It is [illegible] pressure. Available in capacities [illegible]. Write for Bulletin F-[illegible].

Every "Buffalo" product [illegible] the "Q" Factor — the built-in QUALITY which [illegible] satisfaction and long life.

SEE US AT
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Don't Miss Our Display of "BUFFALO" "Q" Factor Products at the 14th International Heating & Air Conditioning Exposition, Philadelphia, Pa., Jan. 26 thru Jan. 29.

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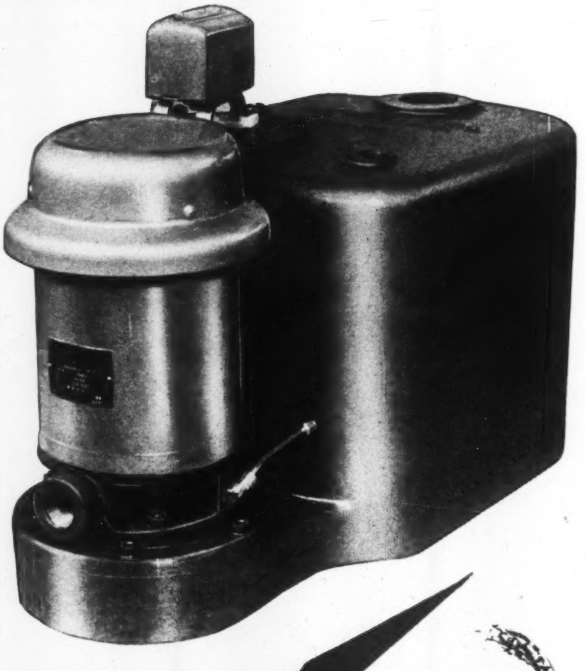
Skidmore Pumps

Here are the answers to—
your Heating Pump Problems



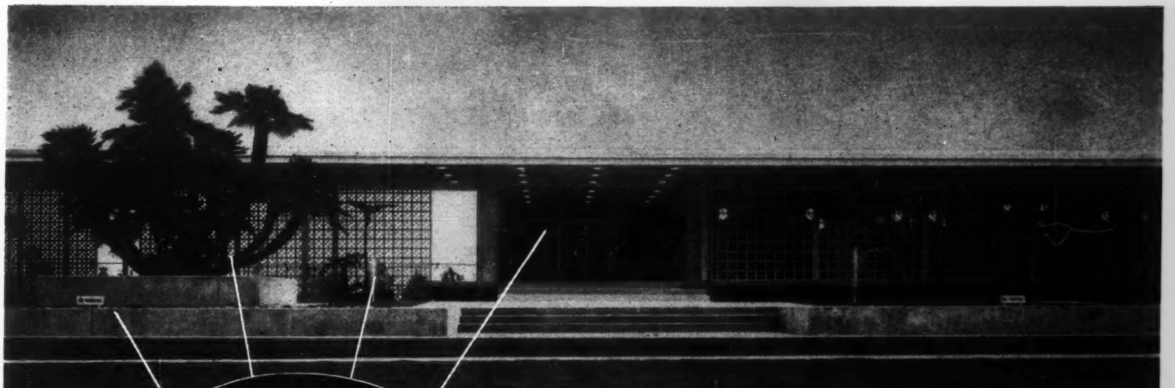
NEW!
CLOSE-
COUPLED
CCVS

Here's the NEW Skidmore CCVS Vertical Pump — offering new high pump efficiency — yet with a minimum motor size featuring new Close-coupled design and mechanical shaft seal . . . complete pump and motor unit is bolted to receiver . . . in sizes for all installations: Three new single units and two duplex units . . . can be installed on floor level or in pit. Write for your copy of new bulletin No. 21-C which fully describes these new, rugged, compact CCVS Skidmore Pumps.

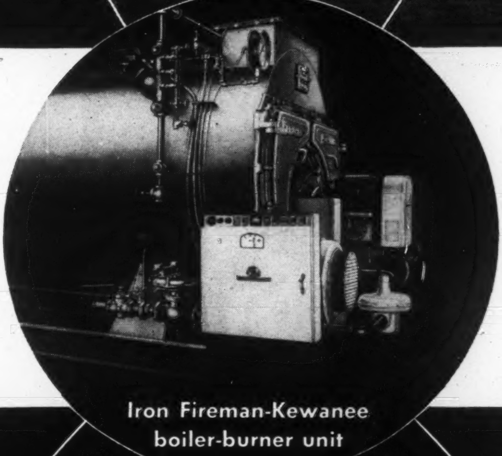
This NEW single
unit above has a
6000 sq. ft. EDR
with 10 gallon
receiver

CHOOSE WITH CONFIDENCE

SKIDMORE CORPORATION • ST. JOSEPH, MICHIGAN



Screened facade of Stuart Co. plant, Pasadena, California



Iron Fireman-Kewanee boiler-burner unit

Lounge and offices overlook spacious atrium

Architect: Edward D. Stone

Mechanical Engineers: Stockly & Bamford

Mechanical Contractors: Hickman Bros., Inc.

Where the *steam* comes from...

for both heating and pharmaceutical processing

One of the notable commercial buildings of the year combines maximum utility with such striking beauty that it has won nation-wide acclaim. Designed by Edward D. Stone, this plant is used by the Stuart Co. for the production of pharmaceuticals.

Up-to-the-minute mechanical equipment includes two Iron Fireman-Kewanee boiler-burner units. Due to forced draft firing, there is no stack to mar the symmetry of the building. Dual-fuel burners efficiently fire gas or any grade of light or heavy oil, with quick changeover.

Complete Iron Fireman boiler-burner units can be easily sized, specified and ordered from a single catalog, with a single model number.

Conservative rating permits an easy, economical "cruising speed" at rated output, with 50% reserve capacity and consequent minimum noise level and low maintenance costs.

Mail coupon for detailed information and specifications.

IRON FIREMAN®

AUTOMATIC FIRING EQUIPMENT
FOR HEATING, PROCESSING, POWER

IRON FIREMAN MANUFACTURING CO.
3160 West 106th Street, Cleveland 11, Ohio
(In Canada, 80 Ward Street, Toronto, Ontario)

Please send catalog and specifications on following equipment:

☐ Complete boiler-burner units
☐ Forced draft firing unit only

Name..
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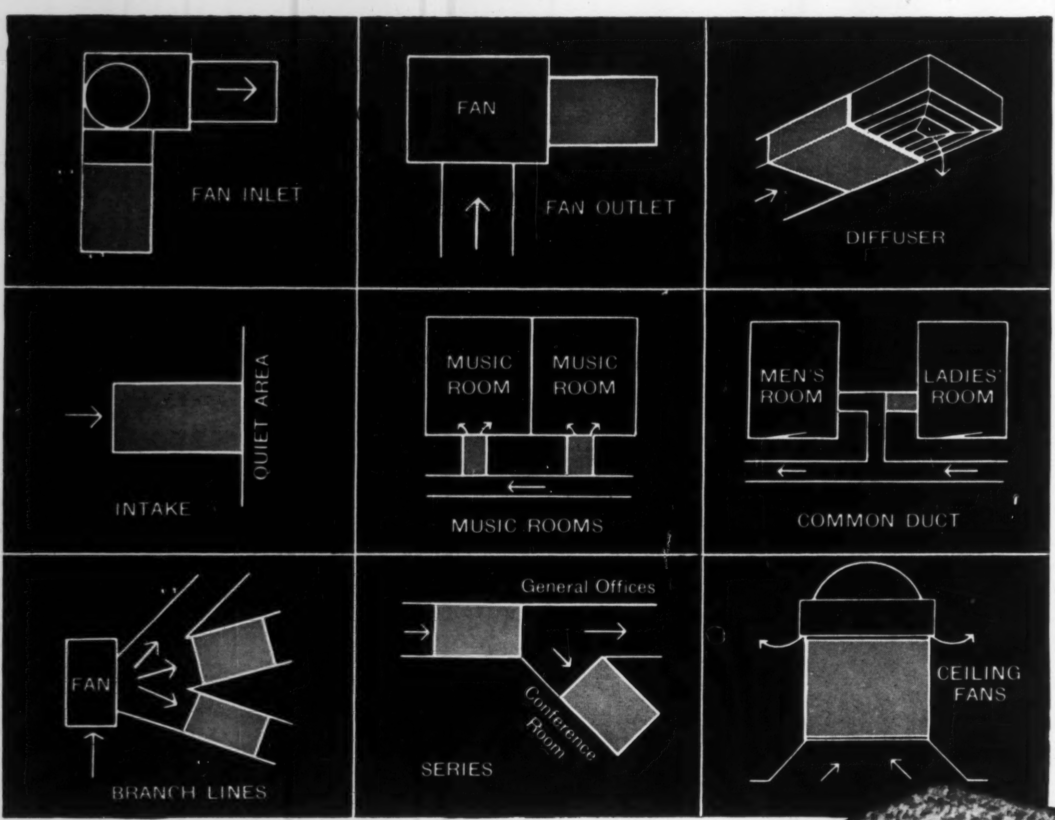
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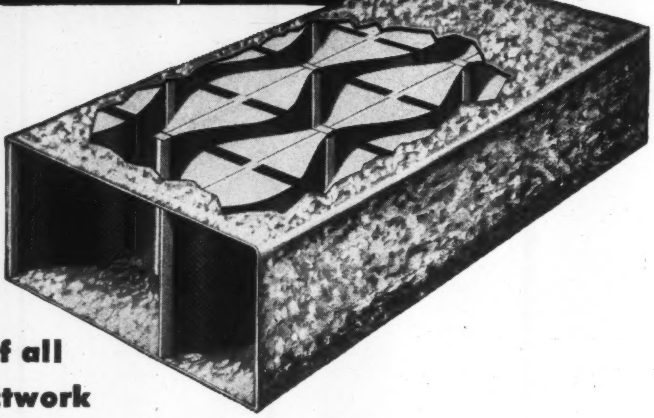
CEILING FANS



Every Building Needs *Aircoustat* Sound Traps

AIRCOUSTAT silences all noise of all frequencies traveling through ductwork

Eliminate disturbance, distraction and irritation caused by noises escaping from one area to another through ductwork.

Install AIRCOUSTAT Sound Traps. AIRCOUSTAT eliminates guesswork, wasted space and unnecessary expense of duct lining. You can guarantee your client trouble-free performance. You can estimate with complete confidence the performance of particular applications. If AIRCOUSTAT fits geometrically, it fits acoustically.

AIRCOUSTAT saves you space. Its greater effectiveness permits smaller-sized ducting. It eliminates bulky mufflers.

For more details, write to KOPPERS COMPANY, INC., Industrial Sound Control Dept., 6201 Scott Street, Baltimore 3, Md.

Get the inside story on AIRCOUSTAT Sound Traps at Booth #72, Jan. 26-29, 14th International Heating & Air Conditioning Exposition, Convention Hall, Phila.

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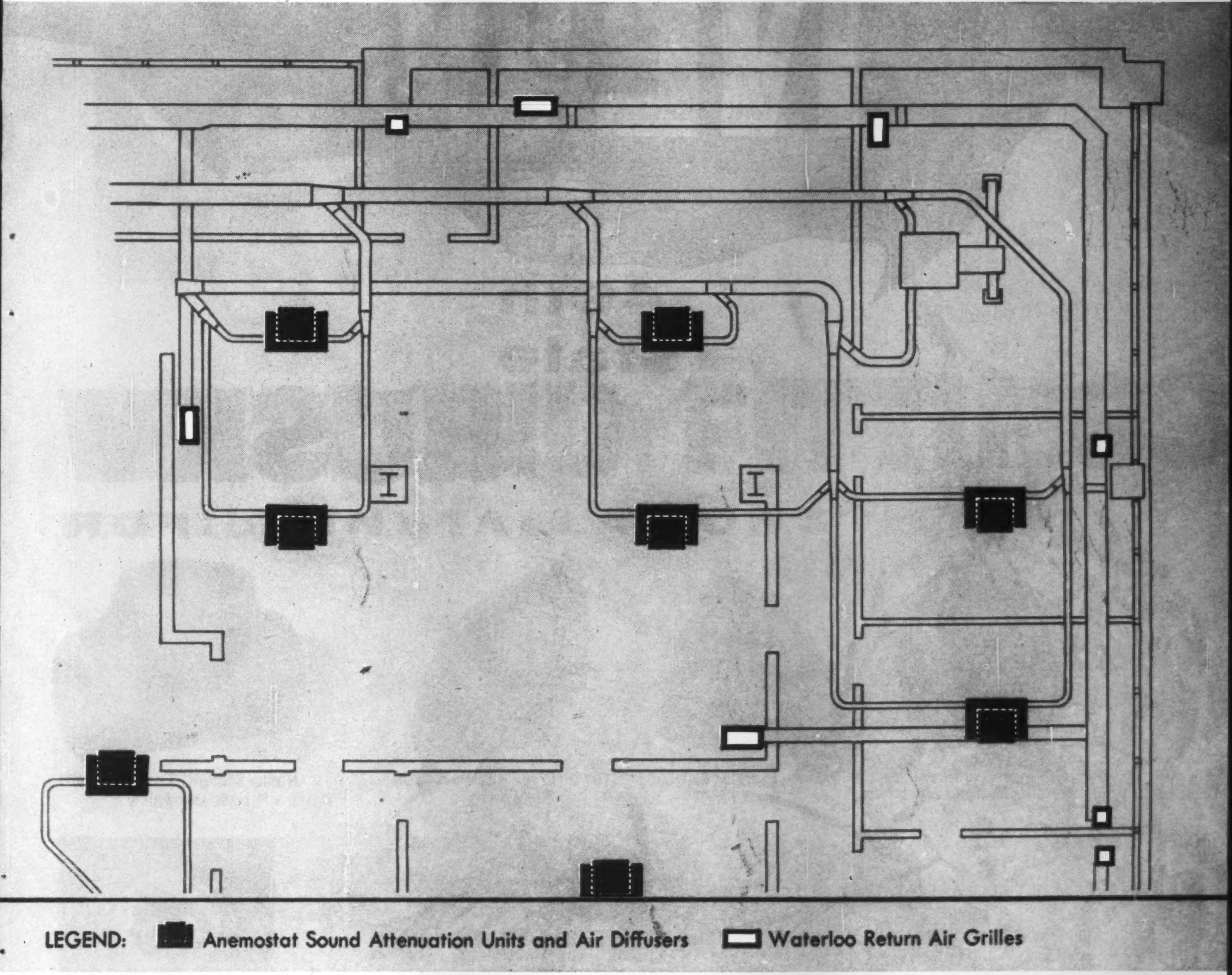
INDUSTRIAL SOUND CONTROL

Engineered **Products Sold with** ***Service***

When you design or specify
be sure of top quality with . . .

ANEMOSTAT®
WATERLOO



LEGEND: ■ Anemostat Sound Attenuation Units and Air Diffusers □ Waterloo Return Air Grilles

In this typical layout you can see how Anemostat All-Air High Velocity units and Waterloo Return Air Grilles team up to insure quiet, draftless, perfectly balanced air distribution.

The Anemostat All-Air High Velocity distribution system offers many important advantages. It can be used with smaller than conventional ducts; it can be installed in less time and at less cost. It requires no coils; therefore, there is no leakage, clogging or odor. Anemostat round, square and straightline diffusers with high velocity units are adaptable to a wide variety of architectural designs.

Waterloo's complete line of registers and grilles is the result of 57 years of experience.

Be certain of top quality performance. Put Anemostat-Waterloo equipment to work in your next job.

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REGISTERS • GRILLES • VOLUME
CONTROL DAMPERS • DOOR VENTILATORS

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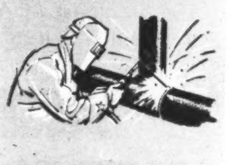
HUSKY

FOR

Husky Straight Tees — No. 211
2″ through 6″

**SEVEN
WAYS
BETTER**



easy to install

Cut pipe to length, place in position and weld. No expensive threading operations, no back-breaking effort of wrenching.

* Fabricated from A106B seamless carbon steel tubing with minimum wall thickness of Schedule 40 tube in comparable sizes.

Welded installations are generally conceded to be superior in all respects, but the high cost of available fittings has curtailed their use to any great extent in low-pressure systems. *Husky* fittings now supply the answer. They are made especially for 150 lb. welded systems . . . and are priced to make installed cost the same or less than that of threaded installations.

WELDING FITTINGS

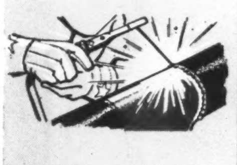
150 lb. INSTALLATIONS*

Husky Reducing Tees — No. 211R
2" x 2" x ¾" through 6" x 6" x 5"

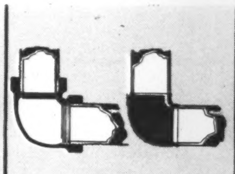
Husky 90° Elbows — No. 207
2" through 6"

Husky 45° Elbows — No. 206
2" through 6"

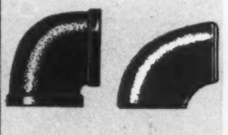
Husky Reducers — No. 201
2" x 1¼" through 6" x 5"



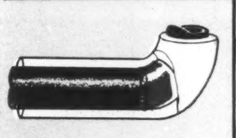
leakproof
Fittings and pipe are joined by metallic bond. Security of joints does not depend upon strength used in wrenching.



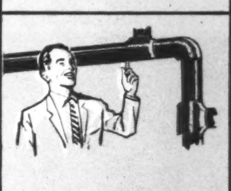
smooth flow
Inside diameter of fitting and pipe meet exactly . . . with no step-ups or downs as in a threaded system.



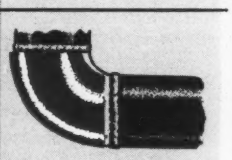
lighter weight
Since ends of fittings need not encompass the pipe, considerable savings in weight is accomplished.



easily insulated
Outside diameter of pipe and fittings are identical for easy application of insulation material.



better appearance
The smooth, flowing lines of a welded piping system present a much more pleasing and professional appearance.



double strength
Full wall thickness is maintained throughout the system, rather than being reduced by one-half at joints due to threading.

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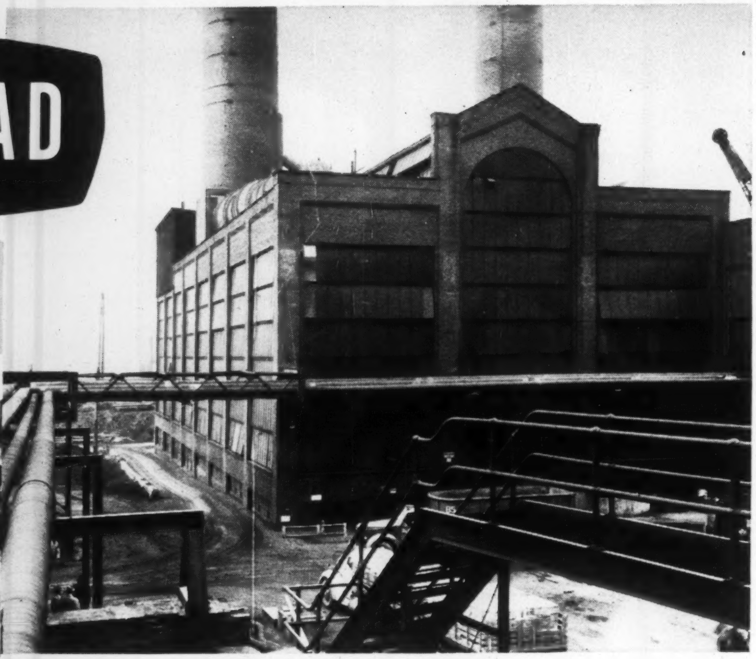
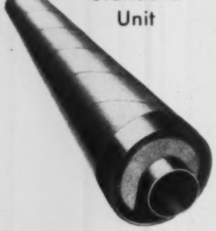


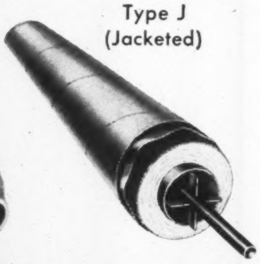
Ric-wiL offers the COMPLETE quality line of prefabricated piping systems

Ric-wiL factory prefabricated piping systems, *timed* to your schedule and *shipped* directly to the job site, can save you valuable time and money. Insulated units are available for steam, hot water, oil, other viscous fluids, process liquids and refrigeration lines . . . and remember . . . Ric-wiL is the quality system of exceptionally high mechanical strength and thermal efficiency.

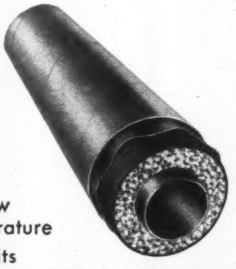


Standard Unit

Type UL



Type J (Jacketed)



Low Temperature Units

Quality Piping Systems . . .
. . . of Exceptionally High Thermal Efficiency

RIC-WIL INCORPORATED

PREFABRICATED **INSULATED PIPING SYSTEMS**

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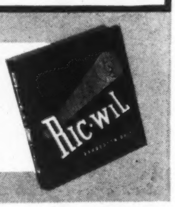
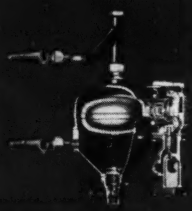
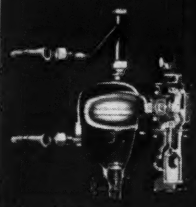
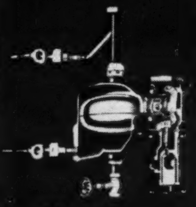




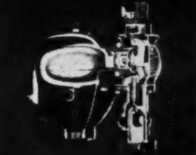
No. 47 Boiler Water Feeder for hand-fired steam boilers up to 5000 sq. ft.



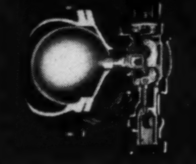
No. 47-2 Feeder Cut-off Combination for automatically-fired steam heating boilers up to 5000 sq. ft.



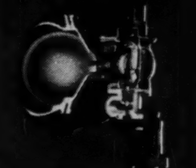
No. 147 Boiler Water Feeder — Like No. 47 but with higher feeding level for small process boilers.



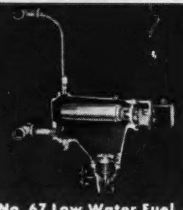
No. 247-2—Feeder Cut-off Combination for small hot water space heating boilers.



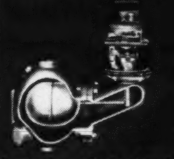
No. 51-2 Feeder Cut-off Combination for automatically-fired heating boilers over 5000 sq. ft.



No. 53-2 Feeder Cut-off Combination — Like No. 51-2 but for higher pressures up to 75 lbs.

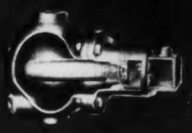


No. 67 Low Water Fuel Cut-off for low pressure automatically-fired steam boilers.

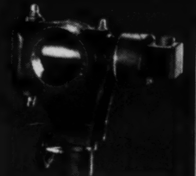


No. 63 Low Water Fuel Cut-off for hot water space heating boilers up to 50 lbs. pressure.

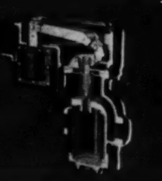
No. 69 "Built-in" Low Water Cut-off. One of many "built-ins" for installation in tapping provided in modern boilers.



No. 61 Low Water Fuel Cut-off for 1" equalizing pipe installation on low pressure steam boilers.



No. 767 Low Water Fuel Cut-off (with No. 14 blow-off) for installation in boiler opening.



No. 101 Electric Water Feeder — Operated by McDonnell two-switch cut-offs or liquid level switches.

How many of these McDONNELL products do you know?

Check them over. You'll find a number of products you know well—but you'll also find many to solve those special problems that come up calling for liquid level controls, flow switches, and related equipment. It will pay you to know these and other products in the McDonnell FULL LINE. Ask for complete information.

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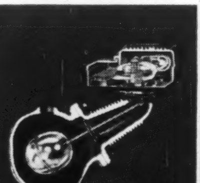
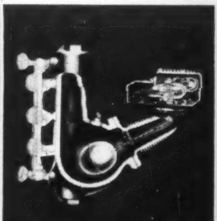
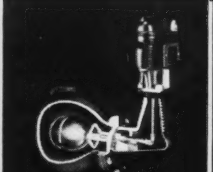
Doing One SAFETY CONTROLS *Thing Well*



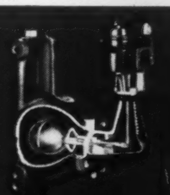
No. 150 Pump Control, Cut-off and Alarm Switch for boilers of any size up to 150 lbs. pressure.



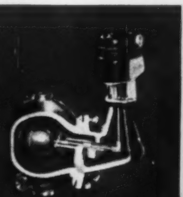
No. 157 Pump Control, Cut-off and Alarm — Like No. 150 but with integral water column.



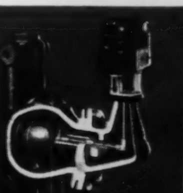
No. 91 Pump Control, Cut-off and Alarm — New magnetic repulsion switching type for boilers of any size up to 150 lbs. pressure.



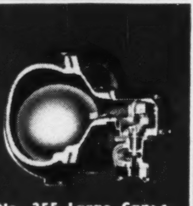
No. 191 Pump Control, Cut-off and Alarm — Like No. 91 but with integral water column.



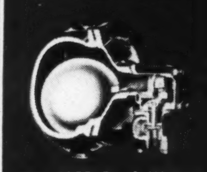
No. 92 Pump Control, Cut-off and Alarm — new magnetic repulsion switching type for pressures up to 250 lbs.



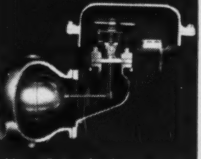
No. 192 Pump Control, Cut-off and Alarm — Like No. 92 but with integral water column.



No. 355 Large Capacity Float Valve—many uses on tanks, stills, receivers, etc.

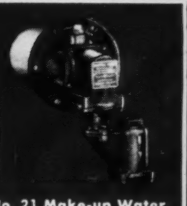


No. 4155 Feed Water Controller for multiple boiler jobs to divert pump discharge into proper boiler.

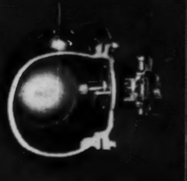


No. 65 Explosion-proof Electric Controller Underwriters' listed for hazardous locations.

No. 80 Float Switch. Three-wire high- or low-level alarm (or pump control) on oil storage tanks.



No. 21 Make-up Water Feeder for maintaining water level in receiving tanks — typical of series with flanges to fit existing tank openings.

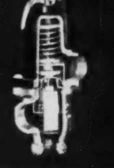


No. 27T Make-up Water Feeder for external application on receiving tanks.

230 Series (ASME) Pressure Relief Valves for hot water boilers, tanks and heaters.

240 Series (ASME) Pressure Relief Valves for larger hot water boilers, tanks and heaters.

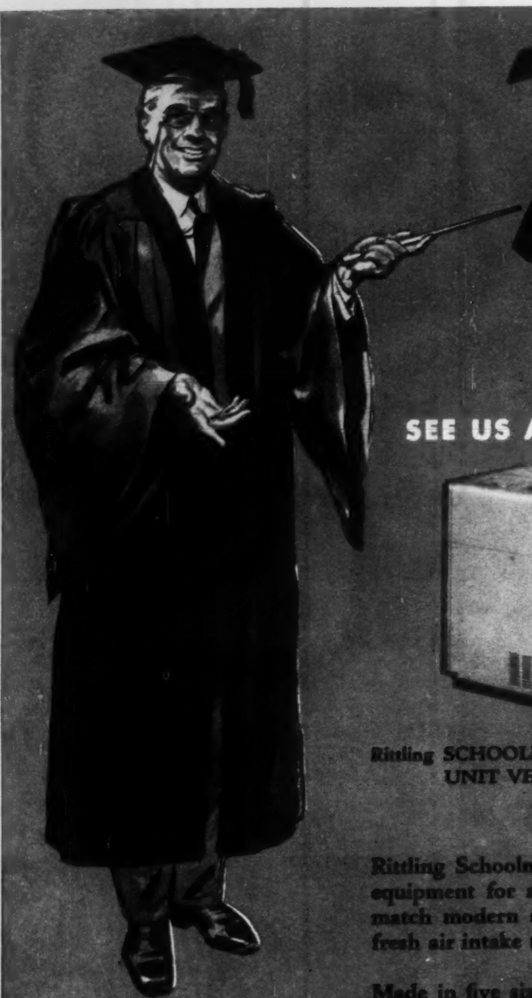
No. 201 Temperature Relief Valve for hot water tanks and heaters. A.G.A. tested, rated and listed.



202 Series Automatic Reseating Pressure and Temperature Relief Valves. ASME (NB) A.G.A.

FS4 Series Flow Switch completes (or breaks) circuit when flow starts or stops. Max. psi, 100 lbs. Underwriters' Listed.

E-2 Series Flow Switch for higher pressure service; max. psi, 150 lbs. Completely waterproof construction



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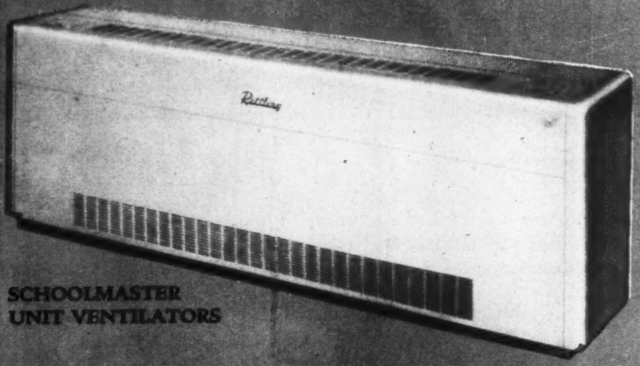


Rittling SCHOOLMASTER
UNIT VENTILATORS

Rittling Schoolmaster Unit Ventilators, the chosen heating and ventilating equipment for schools from coast to coast, have dignity and character to match modern school design. Adapted to all controls of temperature and fresh air intake to bring climatic comfort into every classroom.

Made in five sizes. For use as independent units or with auxiliary radiation to blanket exposed wall or window areas with warmed air.

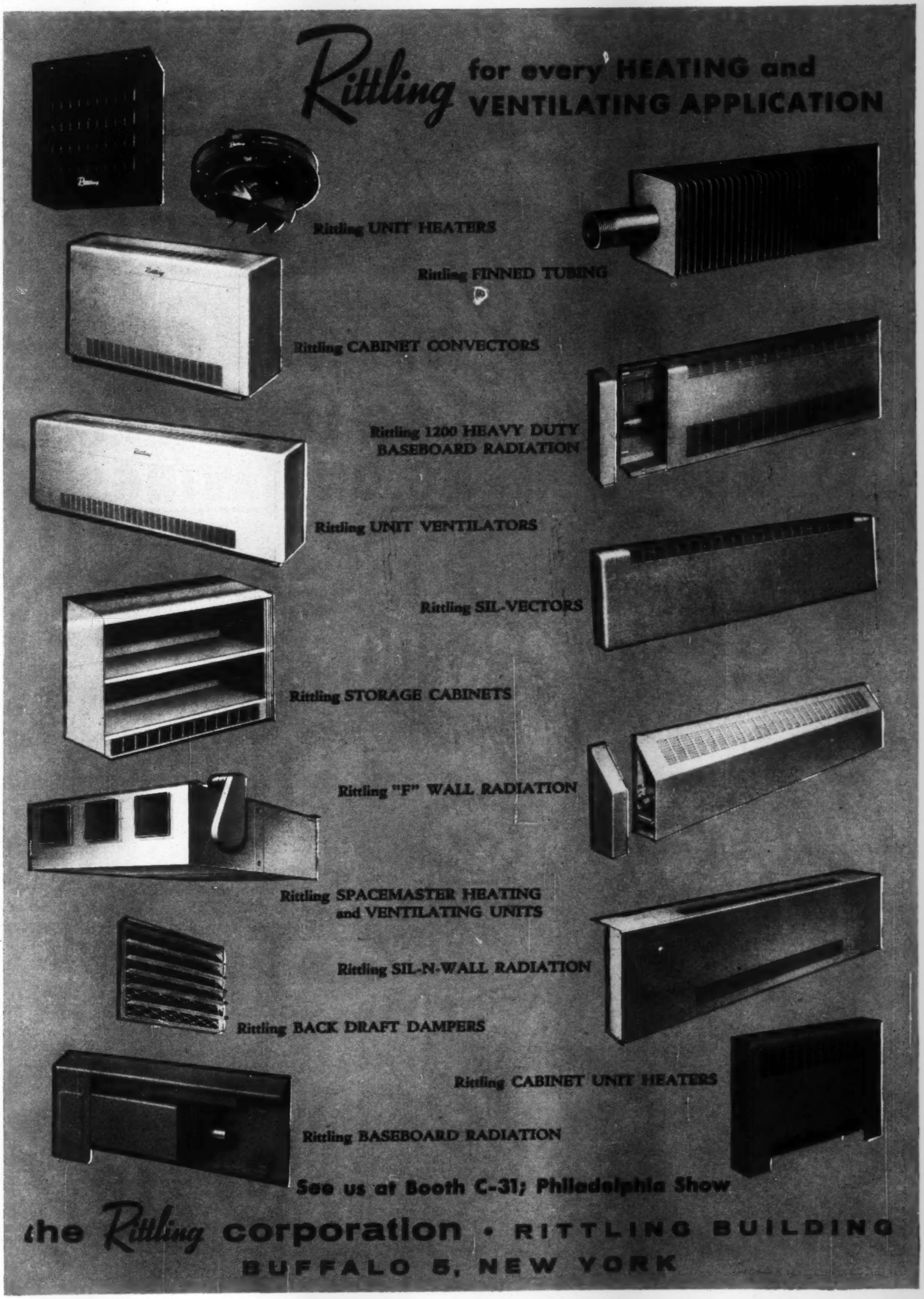
Rittling storage cabinets, available with and without heating element and Rittling SIL-VECTORS, provide wall-to-wall assemblies for exact heating capacity for each room requirement.

Heavy arc welded rigid chassis structure resists "weaving." Accurately formed heavy gage steel cabinets, close fitting joints, smoothly rounded corners, make Rittling Assemblies a favorite with heating men.

Write for Catalog UV 1157 and engineering bulletin.

Rittling Schoolmaster Unit Ventilator with Rittling Storage Cabinet and Sil-Vector Radiation. Formica top over storage cabinets adds to attractiveness and utility of matching units.

the Rittling CORPORATION
RITTLING BUILDING • BUFFALO 5, N. Y.



Rittling for every HEATING and VENTILATING APPLICATION

Rittling UNIT HEATERS

Rittling FINNED TUBING

Rittling CABINET CONVECTORS

Rittling 1200 HEAVY DUTY BASEBOARD RADIATION

Rittling UNIT VENTILATORS

Rittling SIL-VECTORS

Rittling STORAGE CABINETS

Rittling "F" WALL RADIATION

Rittling SPACEMASTER HEATING and VENTILATING UNITS

Rittling SIL-N-WALL RADIATION

Rittling BACK DRAFT DAMPERS

Rittling CABINET UNIT HEATERS

Rittling BASEBOARD RADIATION

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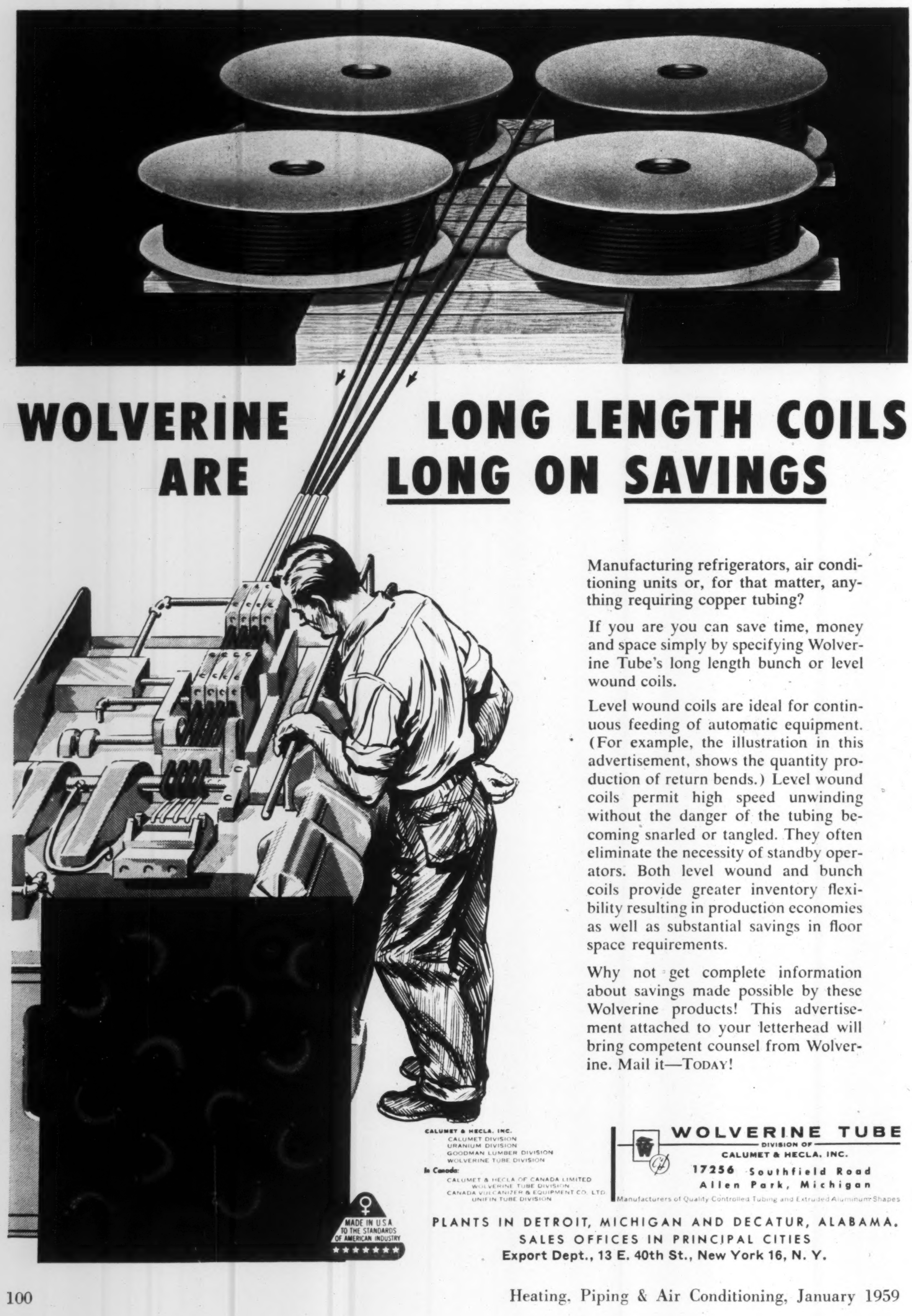

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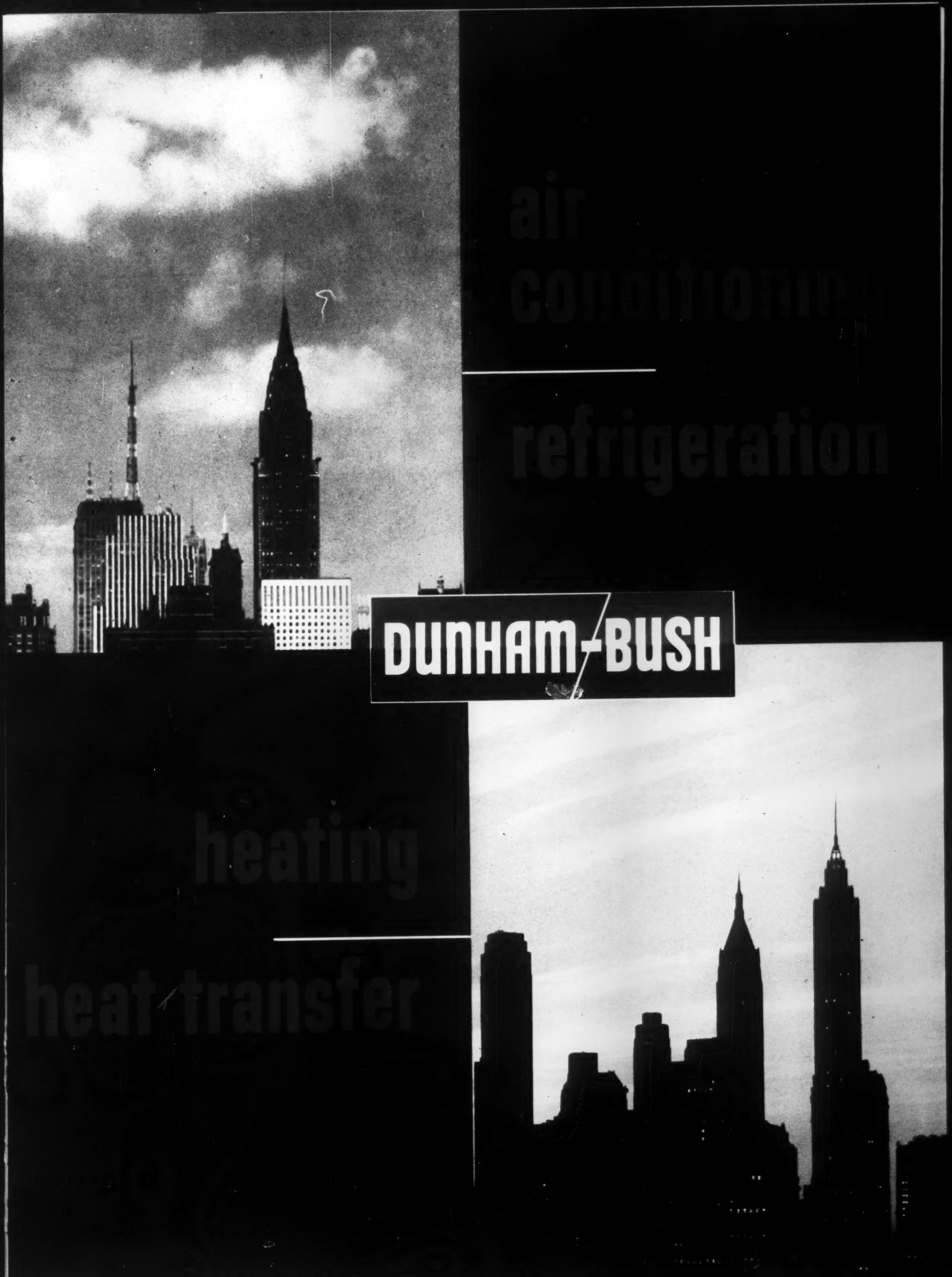
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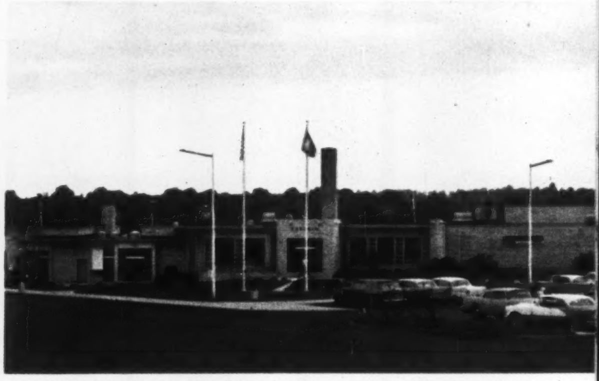
ENTRANCE, SUBURBAN WEST OFFICE BUILDING, Cleveland, Ohio, showing Dunham-Bush Recessed Convectors for heating demands. This building is also completely Air Conditioned by Dunham-Bush Products.



CONNECTICUT TURNPIKE, Savarin Restaurants. Dunham-Bush Unit Coolers, and (illustrated) Cooling Towers and Blower Condensers; Brunner-Metic Rack Condensing Units; Heat-X Inner Fin "PC" Package Chillers and Air Handling Units.

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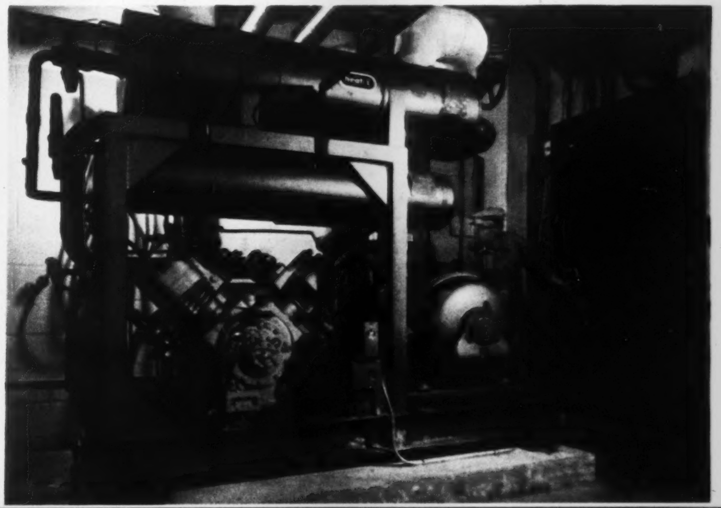

BROTHER RICE CATHOLIC BOY'S HIGH SCHOOL, Chicago, Illinois. Dunham-Bush Pumps, Unit Heaters, Controls, Convectors, Specialties.

ST. PAUL'S CATHOLIC CHURCH, Princeton, New Jersey. Dunham-Bush Hot Water Specialties, Unit Heaters, Convectors, Fin-Vector and Baseboard.

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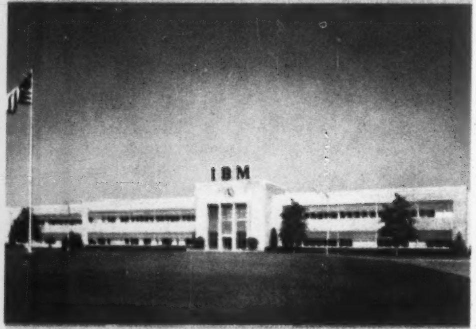

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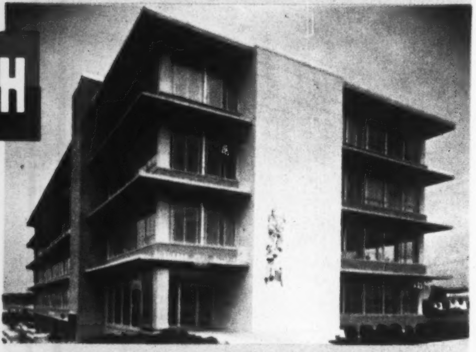

SUBURBAN WEST OFFICE BUILDING, Cleveland, Ohio. Dunham-Bush Package Chiller, CRV Units; Brunner Compressor (a *complete* Dunham-Bush air conditioning system). Also Dunham-Bush heating convectors.

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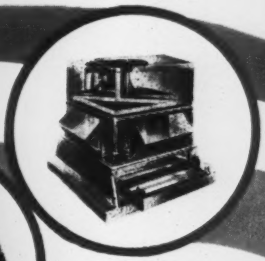
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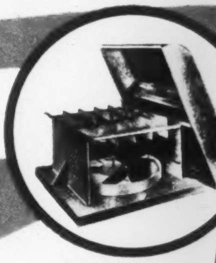
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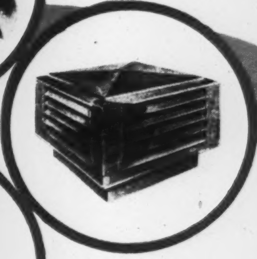
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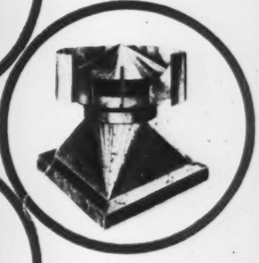
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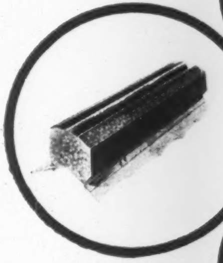
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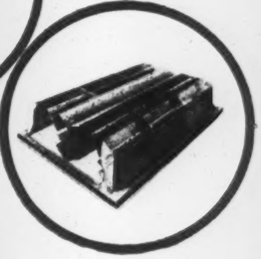
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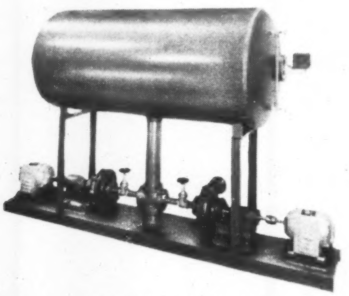

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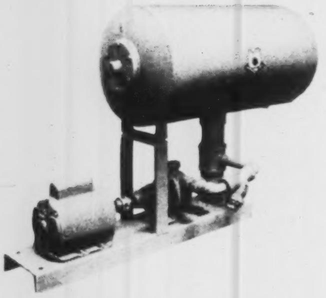

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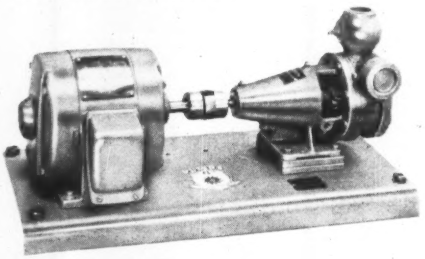

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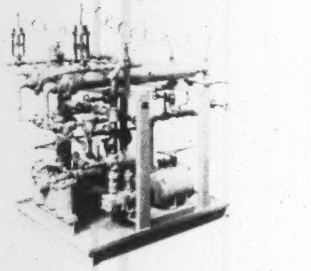

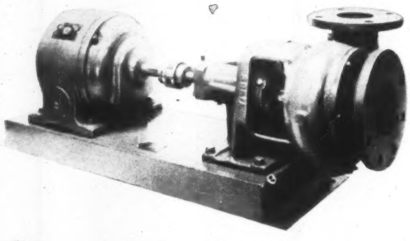

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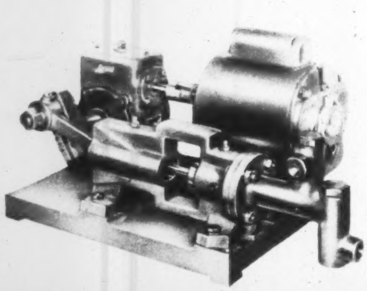

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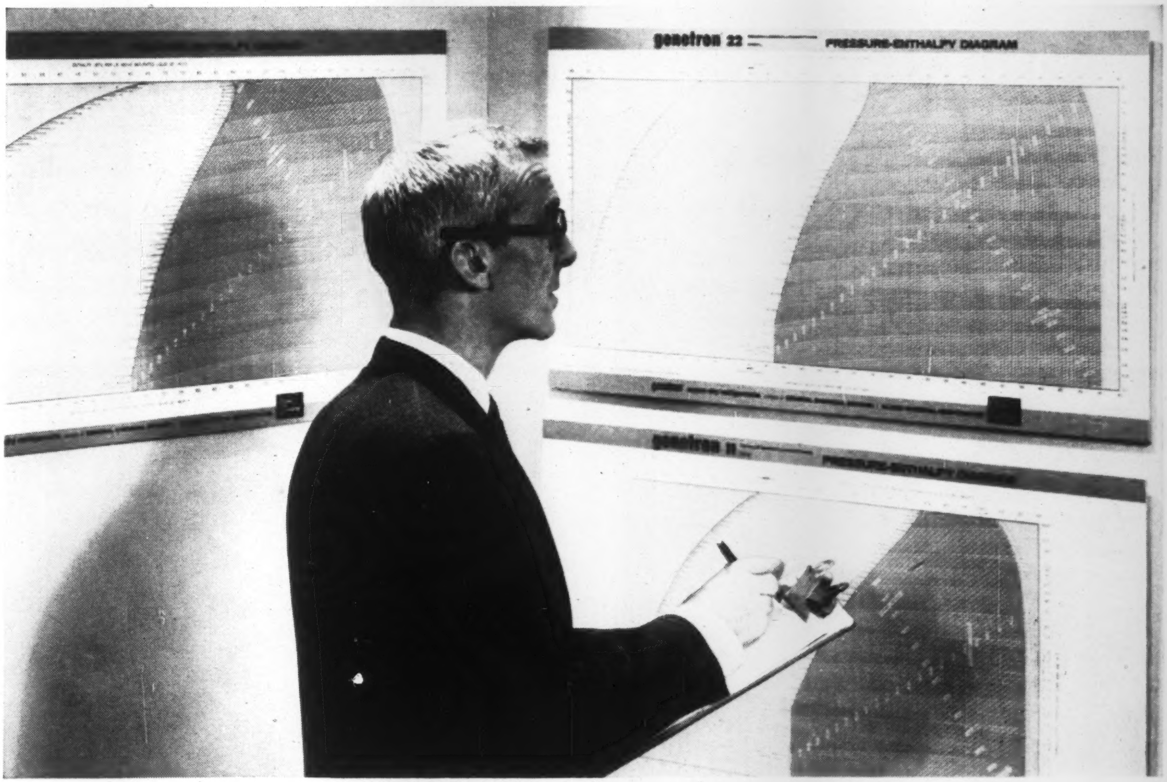
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Every refrigeration engineer and consultant requiring such data in his work should have a set of these superior pressure-enthalpy diagrams.

The supply of these costly charts is limited. They are available *only* to refrigeration engineers and consultants who have real need of such data and will use it for direct application to their work. If you have a serious interest in these charts, please write today—on business letterhead. We'll be glad to send you a set without charge.

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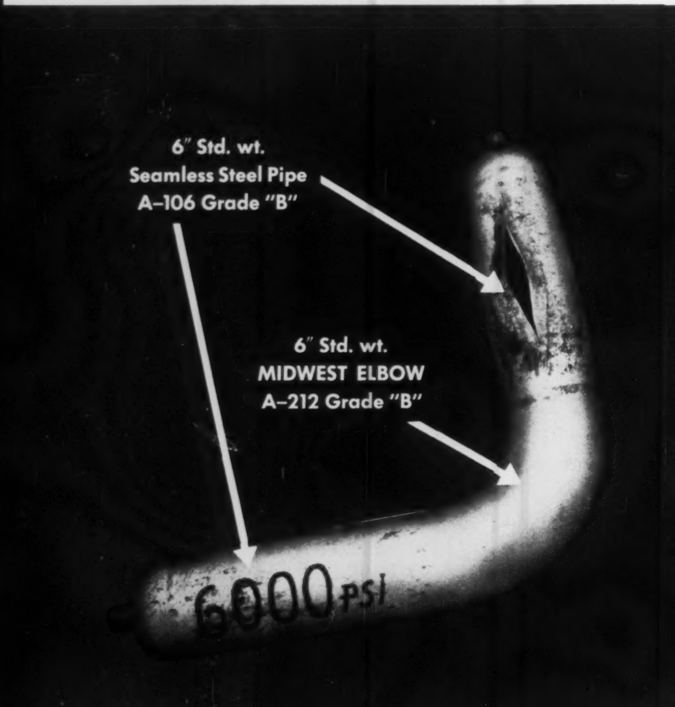
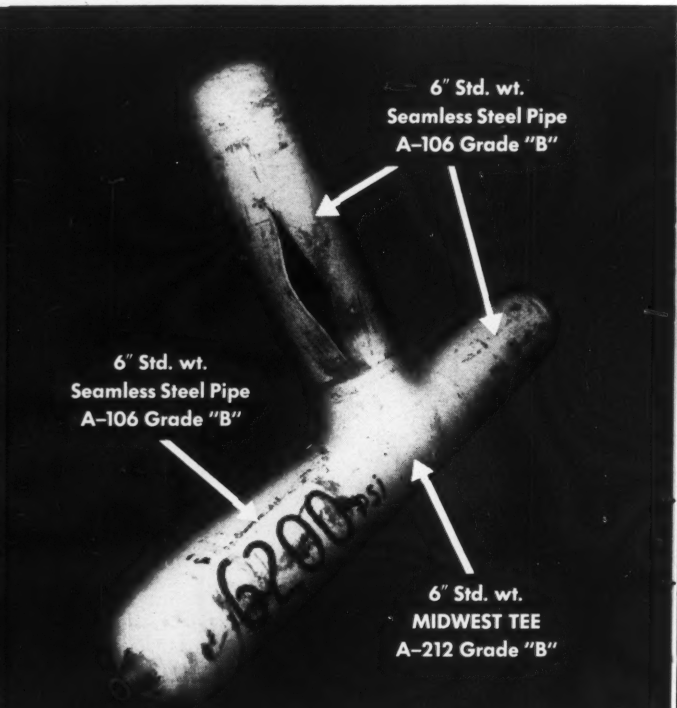


Typical bursting test of stock Midwest Welding Elbow. As is always the case, failure occurred in the seamless pipe while the elbow was undamaged. Bursting pressure was 6000 psi . . . considerably above the required code minimum for seamless pipe. (Minimum allowable bursting pressure for 6″ standard weight A-106 Grade B seamless steel pipe is 4438 psi.)



Bursting test of Midwest Welding Tee taken at random from stock. As always, the failure occurred in the seamless pipe and not in the fitting. The non-shock internal bursting pressure of 6200 psi is well above the code minimum for seamless pipe. (Minimum allowable bursting pressure for 6″ standard weight A-106 Grade B seamless steel pipe is 4438 psi.)

7761

MIDWEST **WELDING FITTINGS IMPROVE PIPING DESIGN AND REDUCE COSTS**

"open for discussion"

• WE FOLLOW HERE each month the practice at engineering society meetings of providing an "open for discussion" period. You are urged to take part. Just address your comments to the Editors, Heating, Piping & Air Conditioning, 6 N. Michigan Ave., Chicago 2.

Must Consider Experience Records Of Electric Heating for Schools

DENARD L. GUSLER's article comparing school heating costs using electricity or oil (October 1958) evidences a conscientious effort to evaluate the increasingly popular use of electricity for school heating. Many of us in the electric heat industry are encouraged to see consulting engineers attempting to evaluate electric heat impartially.

Such efforts frequently fail, however, to take into account actual experience records available regarding electrically heated schools. For example:

1) The article compares a convection oil fired system with exhaust ventilation, at 85 cents per sq ft, with an electric unit ventilator system, at $1.06 per sq ft, although electric convector systems have been installed in similar size schools at 71 cents per sq ft. Adding the author's estimate of difference in cost for boiler room and service area for the two systems to the oil fired system cost, it becomes $21,309, or over 80 percent above the $11,753 for a comparable electric system.

2) The article employs conventional methods of calculating electric heating energy requirements, despite experience records showing that such estimates give high values when applied to electric heating; i.e., my articles, *Heat Schools Electrically?* (December 1956) and *Annual Energy Use for Electric Space Heating* (July 1958).

3) The "hidden costs" of combustion heating are ignored. These "hidden costs" are as much operating costs as the fuel bill, and include such items as:

a) Interest on extra investment for the combustion heated building. For this school, at 5 percent on half the $9536 difference, the cost would be $238 per year.

b) Repayment of extra $9536 principal. Based on 30-year equal payments, this would cost $318 per year.

c) Cost of operation of electric motors on combustion system. A reasonable estimate for the size of school discussed would be $350 per year.

d) Based on the author's estimate of 30-year life of equipment, a reserve of 3 1/3 percent per year should be set aside for depreciation. This reserve would be $318 more per year for combustion heat than for electric, due to the $9536 extra cost. (Experience with electrically heated schools, some of them over 30-years old, indicates much less depreciation compared to combustion systems.)

e) Boiler insurance, building insurance (on extra $9536 cost of building), boiler feedwater treatment, comparative attendants' labor cost, comparative safety, and comparative cleanliness each represent definite costs of considerable combined magnitude, which will vary with local conditions.

It can be seen therefore that these "hidden costs" reduce the annual operating cost difference from about $2500 to $1000 (more or less) at today's rates. On the other hand, experience records indicate energy requirements of 5 to 15 kwhr per sq ft per year for electrically heated schools in climates more severe generally than Virginia, the locale of the installation described by Mr. Gusler. At a realistic 10 kwhr per sq ft per year, the school discussed would require only 165,500 kwhr at a cost of $2483, which is less than the fuel cost plus annual "hidden costs" as well as the $3515 the author estimated.

Despite Mr. Gusler's statement that male janitors will be used at the same cost "regardless of the method of heating the building," several electrically heated schools about this size are using part-time cleaning women at savings of about $1000 per year.

Oil costs approximately doubled between 1940 and 1955, a rise of about 6 2/3 percent per year, while the average cost of electricity held firm. Electric heat is so favorable for expansion of the building that many schools originally built using combustion heat now have substantial additions to them using electric heat. But the most significant and compelling reason that the handful of schools electrically heated a few years ago has now increased to over 100 is comfort — applying exactly the heat desired, when desired, and where desired in a room with better thermal isolation from the outdoors the year 'round whether for normal complete school use or as a room or two for off-school operation.

Mr. Gusler concludes that impartial engineering analysis is the prerogative of the consulting engineer, and views with alarm the extensive assistance on electrically heated schools offered by utilities and the electric heat industry to architects, engineers, and school boards. This viewpoint is quite understandable. However, review of his article and the points that I have briefly mentioned reveal the necessity for the electric heat industry to present their side of the picture. For, while the example the author has presented is economically sound for electric heat today — and more sound each year it operates — a structure still more economically attractive could be attained by designing the building with electric heat specifically in mind and gaining added insulation and reduction of external influences (winter and summer) at no more first cost. Having done this, the true operating cost would be not only competitive, but less than an oil fired system, and great assurance against loss of this favorable position compared to other sources of energy would be gained.

Can we afford to overlook the history of actual cost and authoritative analyses of cost of energy trends in this atomic age? During the transition from conventional fuels to electricity for heating of residences, motels, churches, and schools, many utilities and the electric heat industry feel obliged to offer engineering assistance and advice to architects directly and through their clients, such as school boards. The more rapidly consulting engineers evaluate electric heat in the light of its actual experience record, the sooner this procedure will be unnecessary. Any suggestions from the author regarding an alternative practical method we may use to acomplish this job — which the electric heat industry must do — will be appreciated.

Robert L. Boyd
Product Manager
Commercial Comfort Heating Div.
Edwin L. Wiegand Co.
Pittsburgh, Pa.

The Author's Reply—With reference to the points raised by Mr. Boyd, I would like to submit the following comments:

1) I am surprised to learn that electric convector systems have been installed for as little as 71 cents per sq ft. The figure that I used for the cost of fuel oil heating (85 cents per sq ft) included the complete heating and ventilating system for the entire building; i.e., cafeteria, kitchen, classrooms, toilets, etc. I doubt that the electric convector system at 71 cents per sq ft includes all of the foregoing. The costs for electric heating that were furnished to me were based on actual case histories and were as follows:

School No. 1, unit ventilators and baseboard, $1.28 per sq ft.
School No. 2, unit ventilators, $1.16 per sq ft.
School No. 3, unit ventilators, $1.53 per sq ft.
School No. 4, unit ventilators, $1.17 per sq ft.
School No. 5, unit ventilators, $1.17 per sq ft.

If Mr. Boyd can provide electric convector systems with specified Btu space heat release and ventilation of all spaces as per indicated requirements in my article, then a savings in the initial investment of $9536 is possible.

2) I have read Mr. Boyd's articles and I am convinced that the methods that I used for comparative analysis are adequate and fair. In each case I have used exactly the same method which I would use for coal, gas, or any other source of heat energy.

3) It is not my intent to ignore the hidden costs where and when they actually exist. The interest on extra investment and repayment of principal certainly merits careful consideration. My calculations indicated an initial saving of $2109 in favor of electrical heating which would be cancelled during the first year of operation with the savings in fuel cost when fuel oil is utilized.

It must be emphasized that the end result of any heating system is the liberation of heat in the heated space to replace heat lost to the atmosphere. For example: If the heat loss of a classroom is 50,000 Btu per hr, then 50,000 Btu must be liberated to the space by some heat source. Assuming 1.5 cents per kwhr and 100 percent efficiency, the electrical cost per hr would be 50,000/3416 × 1.5 cents = 22 cents per hr. The cost for No. 2 fuel oil at 16 cents per gal and 70 percent efficiency would be (50,000/140,000 × 70 percent) × 16 cents = 8.16 cents per hr. To ring a more familiar bell, we can consider the comparative cost per million Btu. Electric resistance heating at the same rate would cost 1 million/3416 × 1.5 cents = $4.41 per million Btu, whereas fuel oil heating at the same rate would cost (1 million/140,000 × 70 percent) × 16 cents = $1.63 per million Btu.

In either case the ratio of cost is 2.7 to 1 in favor of fuel oil. If No. 5 or No. 6 fuel oil is used, the saving is much greater. It is obvious that any saving in the utilization of electric resistance heating has to be in initial cost and the installation of controls that will program the electric heat to be used only and exactly when needed. The same kind of controls can be utilized for any other fuel heat source.

I believe the same basis of comparison should always be used. In other words, to compare two classrooms or two schools, exactly the same degree of control should be applied, the same degree of ventilation, the same schedule of heat utilization, and the same quantity of heat dissipation in heated spaces in the same period of time. An electrically heated school and a mechanically heated school cannot be compared unless they are constructed, controlled, and operated in exactly the same way.

With reference to Mr. Boyd's concluding comments, may I suggest that the electric heat industry do exactly what other heat industries do: furnish adequate catalog data to the design engineer. He will do the rest. I do not care what material or method I use if an engineering and economic analysis determines that it is right for the job.

DENARD L. GUSLER
Professional Engineer
Clark, Buhr and Nexsen
Architects and Engineers
Norfolk, Va.

Design Industrial Ventilation Systems For Suitable Inplant Environment

H. P. KAULFUSS' comments and the author's reply ("Open for Discussion," September) to the June article *Industrial Ventilation: How Is It Designed?*, by John H. Clarke, were very interesting. Field observations have shown that the typical modern industrial plant normally includes local exhaust systems which discharge thousands of cubic feet of air per minute to the outside of the plant. Air supply units designed to improve the inplant environment throughout the year then become of prime importance, whereas the merits of mechanical *vs* gravity general exhaust from the roof are secondary.

If the supply units are to function throughout the year, there must be devices with automatic temperature control devices that will supply air at a suitable temperature in cold weather. Of equal importance are the methods of air distribution, as the air should be supplied in what is called the occupied zone (lower 10 ft of the plant) at all times. The distribution must be so designed that objectionable drafts on the employees are not encountered during the heating season and yet, by simple adjustments, high air motion can be provided over the individual during warm weather.

When such supply units are installed, capable of supplying air equal to or slightly in excess of that being exhausted by the local systems, satisfactory conditions will result in all but the exceptional plant.

When coils are placed in the outside walls, depending on vacuum within the building to provide air flow, there is little or no control of the volume or the distribution of the air. Short circuiting of the air to the roof fans often takes place without providing the ventilation that was so carefully shown on design drawings. On the other hand, if air is supplied as described above, the employees are in a controlled atmosphere at all times. In the summer, when higher temperatures are expected in the plant, the windows and doors will undoubtedly be open, thereby allowing additional air to enter the plant to serve the gravity roof ventilators which are normally kept closed in winter.

Various methods of exhausting and supplying air in industrial plants have been compared in the field. Those with mechanical exhaust (whether local or general) without adequate makeup have never been satisfactory in the modern plant. When air supply is offered without adequate control of temperature, volume, and distribution, the improvement is usually slight because the supply does not function properly at all times. Such installations are usually of little value on mild or warm days.

When the air supply is installed to provide suitable temperature and air flow as conditions dictate, improved environment may be provided both in winter and summer. There has been no measurable difference in the environment, under similar air supply conditions, if the general building ventilation in summer was handled by gravity or mechanical exhausters, as long as they were of sufficient capacity to vent the heated air from the building.

For many years heating and air supply have been installed in industrial buildings on the basis of supplying Btu's. Calculations were made on either the building loss or to raise the temperature of the air to a selected figure. Unfortunately, little consideration was given to either the operations in the building or the personnel. It is suggested that future heating and ventilating systems be designed primarily with the idea of providing suitable inplant environment.

K. E. ROBINSON
Ventilation Engineer
Birmingham, Mich.

THE AUTHOR'S REPLY—Mr. Robinson's comments are appreciated and are a welcome addition to this Industrial Ventilation series. We are in complete agreement on the need for well designed mechanical supply systems with proper distribution to the working (occupied) zones. It was not my intent to imply that wall heaters provide satisfactory makeup for occupied areas. It was specifically stated that such natural makeup should be limited to pump rooms and similar spaces not normally occupied, because of the control and ventilation difficulties with such systems.

JOHN H. CLARKE
Engineering Design Supervisor
Air Conditioning and Power
Visking Co.
Div. of Union Carbide Corp.
Chicago, Ill.

In Greenhouse Cooling, Wouldn't Positive Pressure Setup Be Better?

THE ARTICLE *How to Design Controlled Environment for Best Greenhouse Growing Conditions* (December 1958), by Lewis Smith, is timely and significant. We can expect to hear of many more installations such as this one as time goes on. As a matter of fact, this field should become a lucrative one for our whole industry. Luxury crops and off-season crops will be grown in air conditioned greenhouses in ever increasing quantities. Seed production will ultimately be done in an air conditioned greenhouse.

Evaporative cooling has great possibilities for certain crops, but it would be much better to force the air over the pads or through sprays to maintain the houses under air pressure to eliminate the spores and pollens that will be sucked into an under pressure space. Probably in the case of the Pierson greenhouses there was no choice because the cooling was added to an existing greenhouse. The method of introducing the air is quite important for successful operation. Experience indicates that the air should be introduced low and allowed to flow up over the plants.

Mr. Smith has pointed out the need for specially designed lights under which to grow plants. Interesting designs are now being made to accomplish this, but it may be some time before the cost of the lights becomes reasonable for general usage.

It would be interesting to know if the houses are maintained at different conditions for night and day. Most plants appear to like lower night temperatures than day temperatures.

A significant amount of literature is accumulating on this subject and Mr. Smith adds to it appreciably.

ARTHUR J. HESS
President
Hess, Greiner & Polland
Los Angeles, Calif.

THE AUTHOR'S REPLY—Mr. Hess is correct that it would be better to blow the air through the pads or sprays and keep the greenhouse under pressure. I am told that this is realized by the industry, but he must remember that with the exhaust system, as described, most of the air comes through the wet pads anyway and it is only the leakage air which might cause trouble. The amount of leakage depends, of course, on how tight the houses are kept. This is a matter of maintenance.

It is apparently only the cost of installation, especially in existing greenhouses, which prevents the adoption of his idea. I am sure the industry would welcome a practical layout it he could devise one.

He asks if the greenhouses are kept at different temperatures day and night. The answer is yes — lower at night. The control diagram published with my article shows day and night thermostats.

LEWIS SMITH
Heating Engineer
Pelham, N.Y.

Neglected Housekeeping Is Also Cause of Much Unjust Criticism

I HEARTILY agree with the article *Poor Maintenance by Owners: The Bane of Our Reputations* (December 1958). It is not only a blemish on the reputations of the engineer, contractor, and manufacturer; it is also a serious wrong to the owners and their employees.

I would go further and point out that, aside from maintenance, the matter of general housekeeping in a plant is also often greatly neglected. I recall one very large plant where this caused a very serious fire that put the plant out of commission for many months, resulting in a great financial loss to the business.

The first blame was, as usual, put on the design of some of the equipment. But a careful examination later showed that the fire did not start near the equipment which was blamed and that it was in no way responsible. This fact was confirmed by insurance investigators. The engineer was not only officially cleared of any responsibility, but was commended for his clear maintenance instructions, given in writing.

The very seriousness of the damage and the great financial loss involved made the facts come out. This is often not the case where the trouble is merely discomfort and faulty operation.

LEE P. HYNES
Consulting Engineer
Haddonfield, N.J.

Car Paint Velocities Higher; Piping Must Be Smooth Inside

THE ARTICLE *New Cars Get Paint Jobs Via* 25 *Miles of Silver Brazed Lightweight Piping* (November 1958) indicates a trend in the design of paint circulating systems. In the past it had been common practice to use Schedule 40 black iron pipe for these systems in the automotive industry. In fact, most installations utilize black iron pipe; however, success with the Lincoln installation has resulted in considerable interest in steel tubing and there now appears to be a trend away from the Schedule 40 pipe for this type of application.

Circulation of paint in pipe lines involves several problems that are not usually encountered with other fluids. Due to relatively high viscosity, friction losses are more than double that of water. Despite this, velocity of the paint in pipe lines must be maintained at a relatively high level to avoid precipitation of solids. This is particularly true of modern automotive acrylic materials and high metallics in which the metallic flakes must be distributed with absolute uniformity.

In the past, velocity of paint in pipe lines ranged anywhere from about 20 to 30 fpm. This is inadequate for many modern more critical materials, and velocities now range from 30 to as high as 50 fpm. At these high velocities the added friction in Schedule 40 or similar pipe becomes a major design factor. Experience indicates that steel tubing reduces friction losses by at least 20 percent. Thus, each pipeline may be approximately 20 percent longer or the pumping pressure may be approximately 20 percent lower.

Considering that a steel tubing installation costs little if any more than one of conventional pipe, it certainly appears that the decision to use tubing in the Lincoln plant represents a trend in the right direction. The results appear to verify this conclusion.

J. J. CHOVANEC
Regional Engineer
The DeVilbiss Co.
Detroit, Mich.

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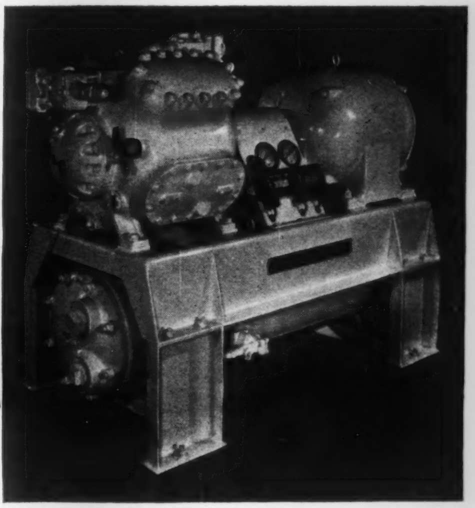
ALL MAJOR COMPONENTS BUILT AND GUARANTEED BY

BELL & GOSSETT

COMPANY



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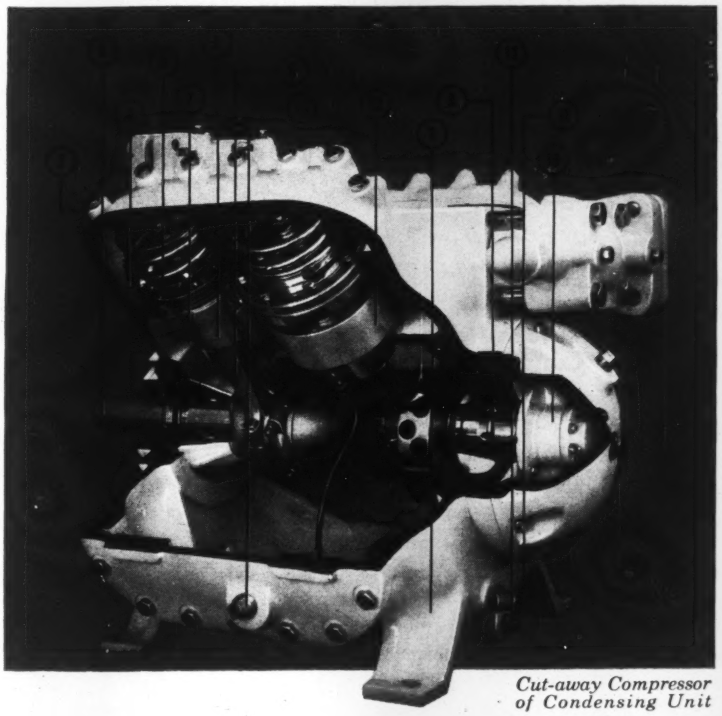

Cut-away Compressor of Condensing Unit

The B&G Condensing Unit offers an impressive list of features, *many of them exclusive*, which make it completely outstanding. It is amazingly compact as well as efficient—the shortest unit available on the market today.

The cut-away illustration shows the highlights of compressor construction—

① **Compressor housing.** Monobloc design using pressure-tight iron which meets Underwriters' requirements for use with R-12 or R-22.

② **Cylinder heads and cover plates.** Cast of same material as compressor housing.

③ **Suction and discharge valves.** Highest grade Swedish steel—non-flexing, full floating. Low lift with positive gas-cushioned backstop for quiet operation.

④ **Safety springs.** Prevent damage from occasional liquid slugs.

⑤ **Pistons.** Automotive type, of light weight alloy. Full floating wrist pin, two compression rings and one oil control ring.

⑥ **Connecting rods.** Light weight, heat-treated alloy—rifle drilled to assure positive lubrication of wrist pin.

⑦ **Cylinder sleeves.** Removable cylinder liners of special alloy iron are machined and housed to a maximum tolerance of 0.0005 inches.

⑧ **Crankshaft.** High tensile, ductile iron. Greater strength and noise dampening qualities make it superior to conventional forged steel shafts. Running surfaces induction hardened and polished—shafts are statically and dynamically balanced—rifle drilled for forced feed lubrication.

⑨ **Main bearings.** Heavy wall bronze, diamond bored after assembly for close tolerance.

⑩ **Forced feed lubrication.** Positive-displacement, self-reversing oil pump supplies excessive oil to main bearings, connecting rods and wrist pins.

⑪ **Crank case heater.** Standard equipment on all compressors.

⑫ **Capacity Control.** Can be equipped with multi-step capacity control system.

⑬ **Standard equipment.** Gas and oil equalization ports, magnetic plugs and oil sight glass.

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question of the month

'What Are the Qualifications For Becoming a Consulting Engineer?'

This question was asked previously in Heating, Piping & Air Conditioning and is repeated here, along with answers that have been received from readers. Other answers or comments for publication are invited.

> *"I would like to know how to proceed to organize my own consulting engineering office.*
>
> *"I would like to know where I can find the necessary information that will instruct me in the legal and other phases of setting up the right kind of organization. Also, I am interested in obtaining information on planning and accounting procedures for this type of operation.*
>
> *"Any advice from readers will be greatly appreciated."—L.W.W.*

Must Develop 3 Basic Qualities: Integrity, Ability, Salesmanship

No COMPETENT professional engineer is fully qualified to enter a practice of consulting engineering until he has developed three basic qualities, namely:

1) Personal and professional integrity
2) Business and organizational ability
3) Salesmanship.

Personal and professional integrity is first and foremost of the three qualities. For without integrity there is no profession nor self-respect as an engineer.

Business and organizational ability is equal in importance to engineering proficiency. Neither can be practiced successfully without the other. Engineers by nature are inclined to believe that outstanding engineering work alone will gain recognition and be profitable. This misconception is probably the major cause of failures among engineering firms. It is necessary that problems in business be dealt with in the same professional manner as engineering problems. Even the smallest organization must develop, or secure from the outside, professional accounting and organizational assistance. It is usually best if the business management personnel are not distracted by engineering problems. Likewise, an engineer should not be required to divide his time between his engineering work and the rather diverse field of business.

It cannot be said that salesmanship is equal in importance to integrity and business ability because a firm can exist on those qualities alone. However, salesmanship will make the difference between mediocrity and a gratifying, successful practice. The truly successful consulting engineer must learn to *sell* in the most subtle manner. He must sell himself, his ability, his service, and his integrity. A successful client-engineer relationship will depend to a large degree upon the client's confidence in the engineer. Client confidence is satisfaction regardless of profit—and it must be sold.

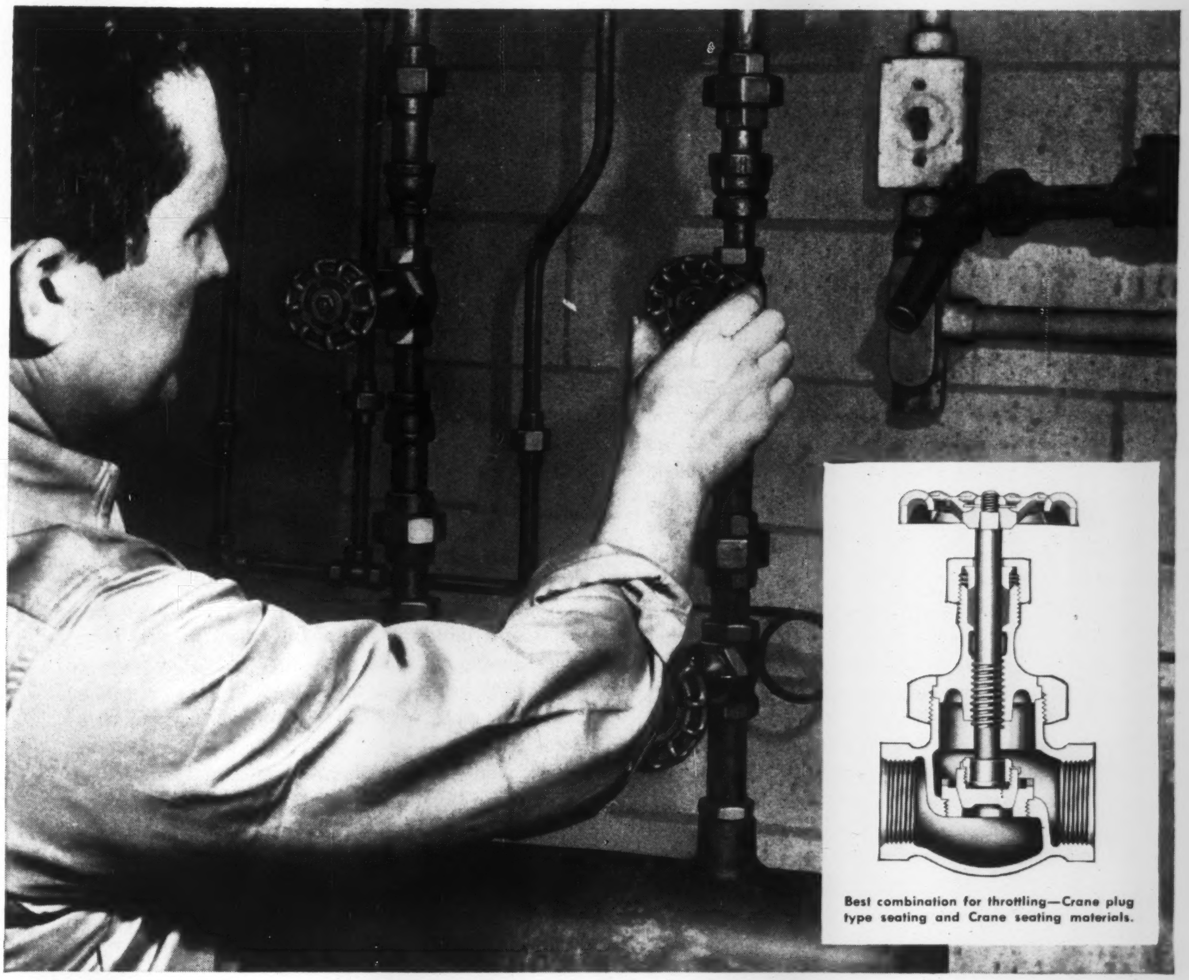
In all probability it is an inner compulsion that prompts anyone to enter private practice. Well-founded self-confidence will serve well to ease the transition from employee status to consulting engineer.

HARRY J. SCHARRES
Associate
E. R. Gritschke & Associates, Inc.
Consulting Engineers
Chicago, Ill.

Before Hanging Shingle, Aspiring Consultant Needs 8 Prerequisites

ALMOST EVERY ENGINEER dreams of the day when he can hang out his own shingle, be his own boss, make a great deal of money, and grow with prestige. What about the road to these delightful ends? To start a consulting business—and consulting is definitely a business—it is necessary that you meet at least eight prerequisites. You must have:

1) Money enough to meet your living and business promotion expenses for one year
2) Adequate place to work
3) Membership in a professional society
4) Readiness to put loyalty to the job above the fee that is obtained from it
5) Ability to meet people—all kinds of people—with unfailing courtesy and good humor
6) Thorough knowledge of your engineering specialty
7) Physical and mental stamina to work 16 or more



Best combination for throttling—Crane plug type seating and Crane seating materials.

Surprising savings for this power plant with Crane bronze throttling valves

At least once a year, this power plant of a leading machine tool builder was replacing the valves in the ½-inch continuous blowdown lines on its 60,000-pound boiler.

They were high-priced valves, but they couldn't take the continual throttling service. The seats cut out rapidly . . . blowdown regulation was lost . . . valve costs kept rising.

Thirty-one months ago this plant replaced the short-lived valves with Crane No. 212P, 200-pound bronze globe valves with plug type disc. Most of the time these Crane valves have been operating at less than half-open.

Yet, at every inspection to date, they've been found O.K.—no seat damage . . . no loss of regulation . . . no maintenance needed. Another proof of the economy of Crane quality!

To cut your valve and piping maintenance costs—on steam or any fluid—call in your local Crane Man. He has more to offer in money-saving piping materials.

COST-SAVING IDEAS FOR YOU in this free 36-page book of "Valve Performance Facts." Get your copy from your Crane Man or write to address below.

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8) Enough faith in yourself and your future to keep going when you feel ready to trade in your shingle for a regular paycheck.

As for working capital, the more money you have, the less likely you are to develop ulcers from financial worries. Consider, for instance, the case history of a typical new consultant. This man started his business in a city of 100,000 and was the only consulting mechanical engineer in the area. Times were good. The situation looked excellent, so he sat down behind his desk and, fortified by having his name in big letters in the yellow pages of the telephone book, waited for the rush of clients.

But there was no rush. In fact, not even one client darkened his door. The weeks passed, and the bank balance waned. Something had to be done. So he donned hat and went forth to ring the doorbells of all the architects in town. He also called on other engineers, since they were not competitors. Some of the industrial concerns received him politely, too.

Nobody offered to be his client nor gave him much hope of becoming a client. However, one of the management engineers pointed out to him that getting business was a matter of having a speaking acquaintance with the right people. This management engineer arranged for the new consultant to speak before the Rotary Club on the subject of atmospheric pollution.

The speech was reported at length in the newspaper. A few days later a contractor phoned. Could the new engineer help to clear up some smoke trouble he was having? He could and did. Then the contractor introduced him to an architect who was beginning a large church job.

The engineer swept through the job with enthusiasm. But just as he came to the end, preliminary estimates by the architect, on a rising market for material and labor, showed that the church was too expensive. A revision of the design was called for, and he had to re-do most of his original work. Eventually the job went out for bids and a month later a contract was awarded. But the building committee had a few more changes they thought would satisfy them more, and some adjusting of the contract followed.

The engineer finally received his payment six months after he began operations.

One might say this case proves the adequacy of a six months supply of money, particularly since other jobs came in soon after the church commission was started. But the fact is, this consultant finished his first year in the red by something over $3000. This sad situation was largely the result of slow collections. But slow collections are something the beginner must expect. Frequently there is considerable delay in obtaining payment for work either in progress or completed. It seems that the bigger and more complicated the job, the longer the waiting period until payment.

The cost of promotion merits attention in the year's financial planning. Consulting engineers do not advertise in the ordinary sense of the word, but the beginner must be prepared to show himself at meetings and banquets, to take prospective clients to luncheons and dinners, and to look prosperous even when he is not. By the end of the year this expenditure can mount up.

Another form of promotion is to make public addresses whenever and wherever you can get an invitation. The costs of your transportation and the value of your time spent in preparing the speech is something you must absorb. In return, you get your name in the papers and some of the things you say might well bring a new client into the fold.

Every beginning consultant faces the question: Should I start operations from an office in my house or apartment or should I rent one elsewhere? The answer is, if you have no immediate clients and must be very careful with your money, and if you have room for a desk and a drawing board in your home, then home is a good place to begin. You save on rent, light, heat, and telephone. While you are out making contacts, your wife can function as your secretary.

This plan loses its efficiency as soon as the clients start coming in and the need arises to hire a draftsman or two. A business office then becomes essential. You will need space for two or three drawing boards, eventually a blueprint machine, consultation space, and all the other equipment of an active office.

Here, a word of caution is in order. These days, engineering firms outgrow their housing at a rapid rate, and the engineer taking his first office will be wise to avoid a long term lease. Rent for no longer than three years if the landloard will agree, even though the rental level looks extremely attractive. By that time you will be shaken down in the business and have a much better idea of just what kind of an office you want. Many engineers prefer to build something according to their own plans, which is an excellent idea if you can justify the investment.

Memberships in professional societies are highly desirable for all engineers—consulting or otherwise. The society is the engineer's best way of keeping up with developments in his particular engineering world. The contacts are invaluable. State examining boards consider a membership certificate to be important evidence in sustaining the holder's claim of professional competence. Clients, too, like to know that their engineer is a qualified member of an important society. This knowledge gives them confidence in his ability.

The cost of joining a society might be painful to the beginning consultant who has so many other initial expenses to meet. Nevertheless, the results will be worth the sacrifice.

Loyalty to a job, out of all proportion to the size of the eventual fee, offers a challenge sooner or later to every consulting engineer. You can expect this challenge to be repeated time and again as the years go by and the business grows. The pain is, of course, greatest in the beginning years, when constant revisions, major changes, and perhaps some errors require you to do far more work than you ever expected—and at no increase in fee. The temptation to ease your way out, to seek more profitable connections, can be rather overbearing as you realize you are on the verge of going broke.

In this situation, making a business loan at the bank is far more desirable than easing out of the job, or even of skimping it a little. A loan can be repaid given a bit of time, but leaving a bad taste in your client's mouth will do you more harm in the long run than a dozen good jobs can wipe out.

Actually, establishing good credit with a bank has highly significant value. The beginning consultant should do so as soon as he can. Then when the big job comes along and he needs bank support he can get it with minimum time and trouble. If a loyalty job does no more than build up an engineer's credit with the bank, it has a far reaching effect on his future career.

Psychological factors in a man's makeup have important influence on his degree of success. For instance, have you schooled yourself to be unfailingly courteous to everybody at all times and to maintain your temper despite powerful provocation? The answer here must be in the affirmative, of course. Keeping your composure can sometimes mean the difference between getting a job and not getting it. Your very livelihood depends on this.

Every engineer on the verge of going into business for himself wonders if he has enough experience to honestly call himself an expert. Engineering literally is growing at a mushroom rate and it is the responsibility of the practitioner to grow with it. The man who says to himself "I know enough" is finished as a consultant before he starts.

Perhaps the ideal age for starting out as a consulting engineer is between 40 and 50. By that age maturity is in full bloom, all the mistakes that are the lot of the young engineer are behind him, and he possesses considerable knowledge in at least one phase of engineering. Whatever the specialty, this is the field in which the new consultant should seek his clients. He should, at first, limit his work to this.

Work in related fields will come in. This is the reason engineering offices grow. A specialist in a related field becomes necessary. He may become an associate, a partner, or an employee.

In this ideal decade of a man's life he also has the physical and mental stamina to work long and continuously. This is a highly valuable asset in a newly established business when collecting as soon as possible for a job completed has an importance it will never have again. To work on Saturdays, sometimes Sundays, many nights, and most holidays, is the common lot of the new consultant. If your health cannot carry such a load, you must compensate for this condition by having more money in the bank and by resigning yourself to a longer period of financial insecurity.

After your 50th birthday, the individual venture carries more risk, primarily because your working expectancy is now only 15 or 20 years at best. Moreover, leaving a longtime employer might mean the sacrifice of a substantial stake in a pension plan. It means starting all over again to build up something for old age security. Whether the possible rewards of self-employment are worth the risk is a matter, at this age, for the most careful kind of personal decision. Do you go on? Or do you fall back on the security of a regular paycheck?

ROBERT H. EMERICK
Consulting Engineer
North Charleston, S. C.

READER ASKS—

"Would Stainless Steel Coils Solve Oil Piping Problem?"

"In the last few years, a number of heating projects using much underground reticulation have been installed with high pressure, high temperature hot water as transfer fluid.

"A local supplier markets a heat transfer oil which is suitable for temperatures up to 600 F in a closed circuit and at atmospheric pressure. This fluid seems to offer many advantages. The main disadvantage appears to be its viscosity at temperatures below 10 F and its adverse effects on copper. Stainless steel coils could be substituted.

"Has any considered thought been given to such substitution? If so, what possible pitfalls may we expect? Are there any typical installations? This method seems to eliminate the expansion and corrosion troubles associated with water.

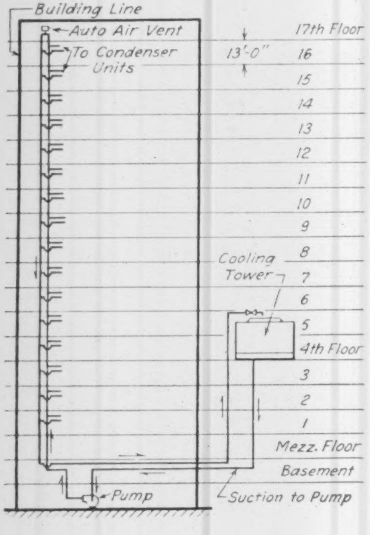
"Information from readers will be appreciated."—R.C.M.

• *YOU ARE INVITED to contribute a question for publication, or an answer to a published question. Please address your reply to the Editors, Heating, Piping & Air Conditioning, 6 N. Michigan Ave., Chicago 2.*

What Is Correct Pump Head For Cooling Tower Piping?

This question was asked previously in Heating, Piping & Air Conditioning and is repeated here, along with answers that have been received from readers. Other answers to this question appeared in Question of the Month in the October, November, and December issues. Other comments for publication are invited.

"I have a problem of accurately determining the pump head for the piping system where cooling water is pumped from a sub-basement to condenser units on all of 16 stories and then to a cooling tower which has the water inlet on the fifth story level. See the drawing below.


Building Line
Auto Air Vent
To Condenser Units
13'-0"
17th Floor
16
15
14
13
12
11
10
9
8
Cooling Tower
7
6
5
4th Floor
3
2
1
Mezz. Floor
Basement
Pump
Suction to Pump

I would appreciate any suggestions that others may have on how this problem may be solved."—J.A.W.

Calculate Total Dynamic Head Using Bernoulli's Theorem

TOTAL dynamic head for the system described by J.A.W. may be calculated by applying Bernoulli's theorem. The relations expressed by this equation are as follows:

$$\mathrm{TDH} = [Z_2 + (144\ P_2/p_2) + f_2 + (V_2^2/2g)] - [Z_1 + (144\ P_1/p_1) - f_1]$$

where:

TDH = total dynamic head, ft

Z_2 = static head between pump outlet and highest point in system, ft

P_2 = pressure at pump outlet, psig

p_2 and p_1 = water density, lb per cu ft

f_2 = total friction head in discharge system between pump outlet and cooling tower inlet, including piping, fittings, valves and equipment, ft

V_2 = water velocity entering cooling tower, fps

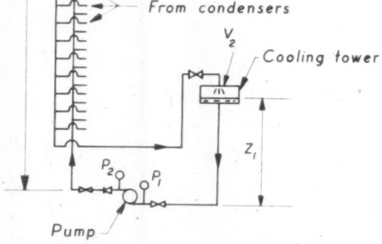
g = acceleration of gravity, 32.2 ft per sec^2

Z_1 = suction head between water level in cooling tower basin and pump impeller eye, ft

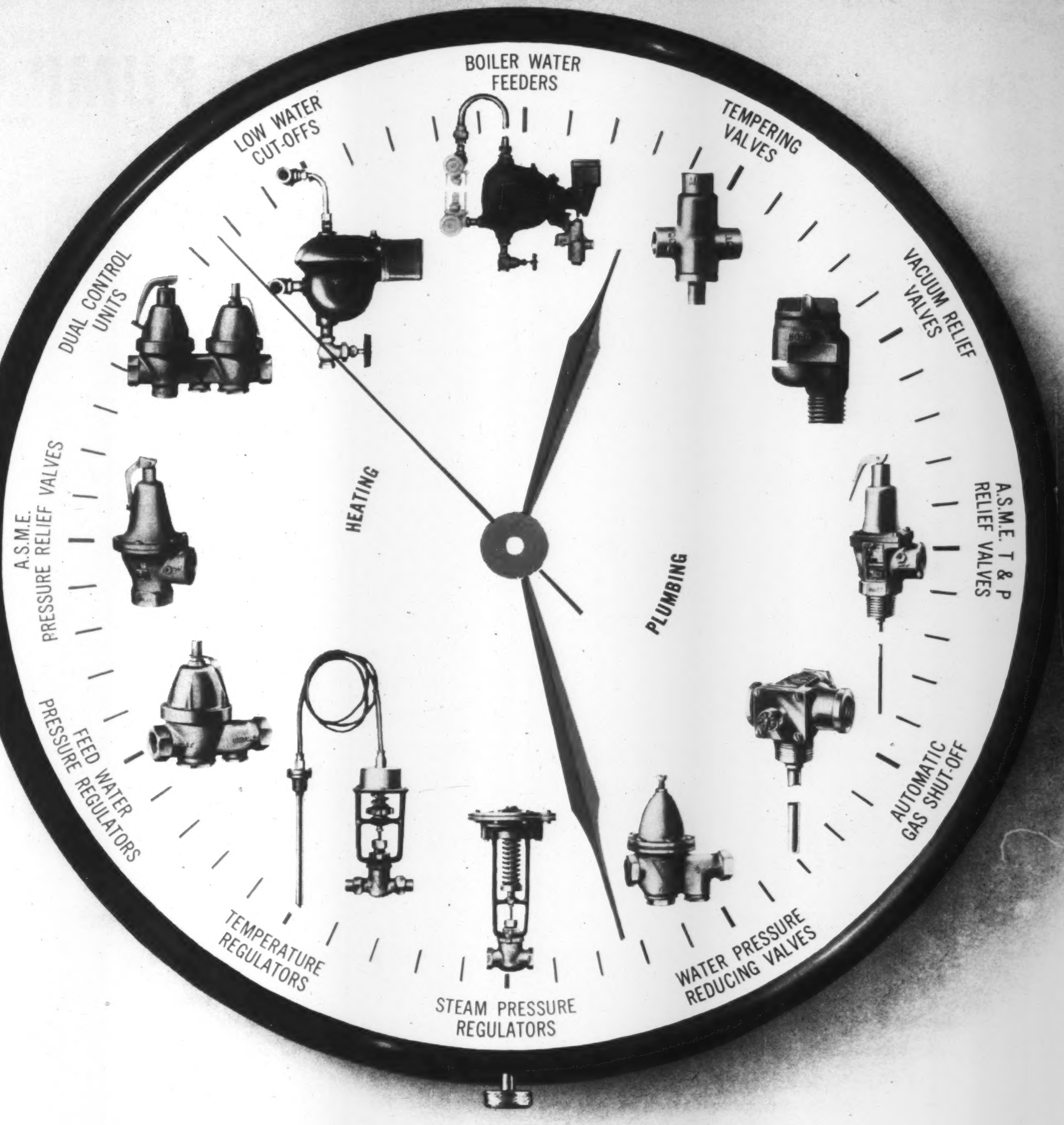
P_1 = pressure at pump inlet, psig

f_1 = total friction head in suction system between tower outlet and pump inlet, including piping, fittings, valves, ft

The sketch below shows how these relations apply to the system described by J.A.W.


Air vent
To condensers
From condensers
Z_2
V_2
Cooling tower
Z_1
P_2
P_1
Pump

H. B. WAYNE
Consulting Engineer
Woodhaven, N.Y.


BOILER WATER FEEDERS
TEMPERING VALVES
VACUUM RELIEF VALVES
A.S.M.E. T & P RELIEF VALVES
AUTOMATIC GAS SHUT-OFF
WATER PRESSURE REDUCING VALVES
STEAM PRESSURE REGULATORS
TEMPERATURE REGULATORS
FEED WATER PRESSURE REGULATORS
A.S.M.E. PRESSURE RELIEF VALVES
DUAL CONTROL UNITS
LOW WATER CUT-OFFS
HEATING
PLUMBING

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You save on-the-job time. Watts Safety Valves and Controls are easy to install. And Watts dependability eliminates costly call-backs.

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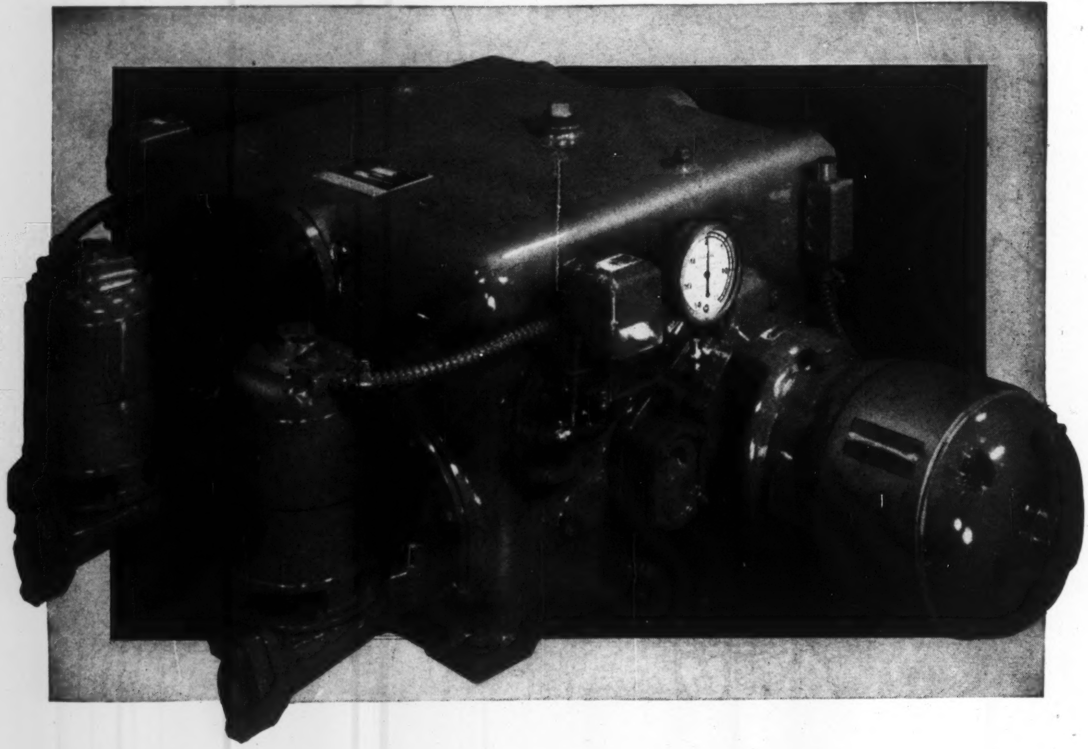
Time-Proved . . . *in Residential, Commercial, Industrial and Institutional Installations*

THIS NEW VACUUM HEATING PUMP IS SIZED TO ACTUAL JOB REQUIREMENTS



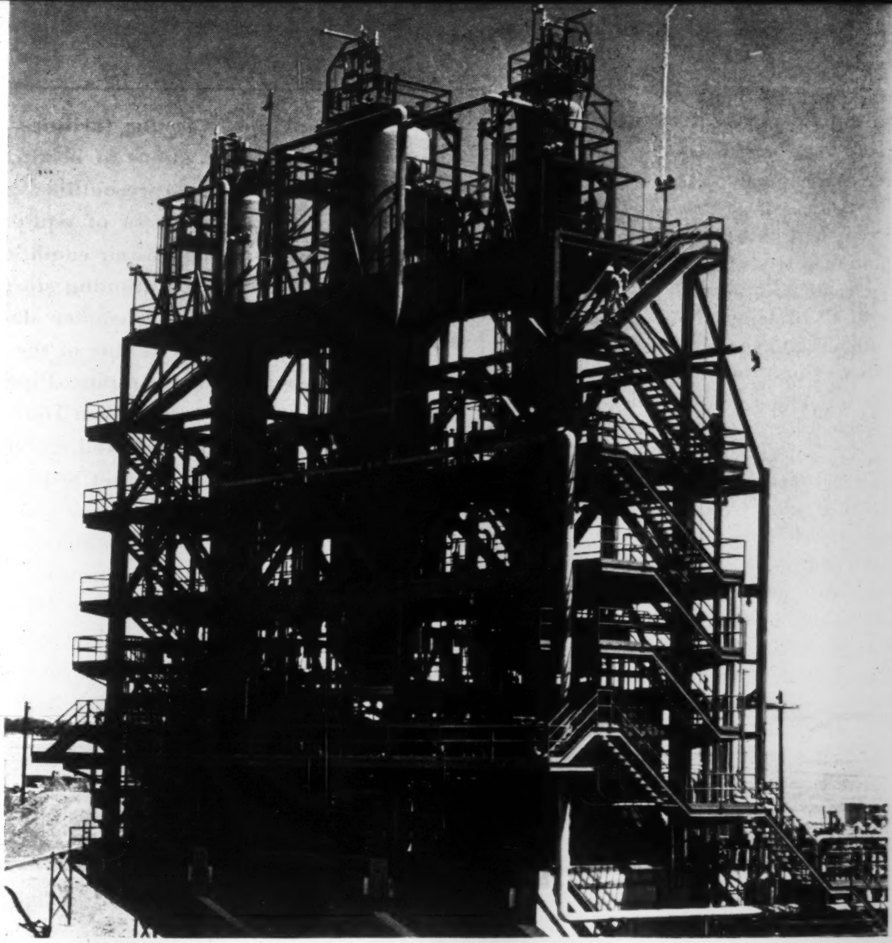
It's the Nash CSM

No longer is it necessary for the Engineer to accept a vacuum heating pump with air and water capacities based inflexibly upon square feet of equivalent direct radiation. With the flexible Nash CSM he can provide for proper air capacity in accordance with his judgment and experience. For the individual capacities of the separate pumps on the CSM may be varied within a wide range, without buying an oversize receiver and oversize water pumps.

These pumps possess many other features which permit a more efficient utilization of fuel and minimum use of electric power. Low, low, returns reduce installation costs and usually eliminate putting the pump in a pit. Simplicity and efficient operation reduce supervision and maintenance costs. Information regarding this new heating pump development is available immediately upon request.

- ✓ **Increased air capacity induces rapid system response without wasteful overheating.**
- ✓ **Separate air and water pumps individually selected to meet actual job requirements.**
- ✓ **Control system that operates individual pumps only when needed.**
- ✓ **Flexibility permitting addition of radiation without changing basic pump installation.**
- ✓ **Low, low, return line connection.**

NASH ENGINEERING COMPANY
438 WILSON, SO. NORWALK, CONN.



Outline Specs for Test Chambers

. . . that simulate space travel for rockets and missiles — taking them through their paces of extreme heat and cold

BY B. F. ROSE, JR.
Manager
Architect-Engineer Div.
Aerojet-General Corp.

With research and development now proceeding rapidly toward space navigation and extraterrestrial flight, we are concerned immediately with temperatures bordering absolute zero, ultra-high temperatures and ultra-high temperature materials, ultra-high speed gas dynamics, and ionic, free-radical, and nuclear propulsion systems. The design and installation of facilities for testing rockets and missiles is challenging. The future of heating, piping, and air conditioning applications in this "world of tomorrow" opens new frontiers to the engineer and contractor. ▶▶▶

● Missile and rocket testing facilities are requiring expanding engineering applications of heating, piping, and air conditioning services. These are outlined here in the design of a typical facility. Major items of equipment are an environmental test chamber and its air conditioning unit, a fuel cooling unit, and a fuel conditioning storage tank with integral heating equipment. Test chamber design conditions range from −65 to 165 F. An outline of the specifications includes the materials suggested for piping. Pipe diameters range from a fraction of an inch to more than 16 in.

Mr. Rose is particularly well qualified to present this outline for this missile and rocket testing facility. Since joining Aerojet-General in 1947, he has risen rapidly from design engineer to assistant chief facilities engineer to chief facilities engineer and on to his present position. Mr. Rose was graduated from the University of Illinois and is a registered professional mechanical engineer in the States of California, Colorado, Missouri, Texas, and Florida. Many facilities for testing rockets and missiles have been built under his direction, both in this country and in Canada.

CONSIDER the flight of a rocket into space. For hours or days it has been sitting on its launching pad at ambient temperatures common to sea level atmospheric pressure. During the latter part of the count down, the fuel and oxidizer tanks are filled. Extreme precautions are taken to make sure that no droplets of these hypergolic (auto-igniting when mixed) propellants contact each other before firing, and, if liquid oxygen is the oxidizer, that not a trace of moisture is in any valve or associated piping through which the liquid oxygen will flow. A tiny bit of ice can easily sabotage the entire flight.

Upon firing, the missile rises with rapidly increasing acceleration until first-stage burnout. During this period of initial flight the second and third stages have experienced certain temperature changes, in addition to the effects of vibration, acceleration, and changes in atmospheric pressure.

Well out in the atmosphere, the temperature falls rapidly except on surfaces exposed to the direct heat of the sun. Spin will level off this temperature curve somewhat, but it must be considered. The third stage fires and the temperature lowers rapidly again. The "coasting" period may last considerably longer than the three firings. Then re-entry for the payload and the events are reversed rapidly with temperatures reaching high extremes.

The foregoing may suggest some of the considerations for environmental testing at the proving ground under static conditions. For the present purpose, we will consider environmental temperature control in the main, rather than numerous other and equally important parameters.

Let's assume the requirements for a hypothetical facility for environmental tests and outline the specifications. It is further assumed that the static test stand, blockhouse (instrumentation and control rooms), and all utilities (power, water, pressurizing gas, etc.) are existing. The project will be to modify the facility for environmental tests.

The following specification consists of design criteria covering environmental test equipment for test stand X-73. The major items of equipment are an environmental test chamber and its air conditioning unit, a fuel cooling unit, and a fuel conditioning storage tank (with integral heating equipment). Preliminary drawings, as listed, are a part of this specification.

The standards governing design of the environmental test equipment will include Military specifications, the ASHAE Guide, the ASA Code for Pressure Piping, the ASME Code for Unfired Pressure Vessels, and general safety requirements for fueled and liquid oxygen charged missiles under conditions of extreme environment.

Design for −65 to 165 F

Design conditions require that the test chamber will be constructed for extended temperature tests at temperatures ranging from −65 to 165 F. It will consist of prefabricated, metal faced, removable, insulated panels forming a cell 20 × 20 × 70 ft.

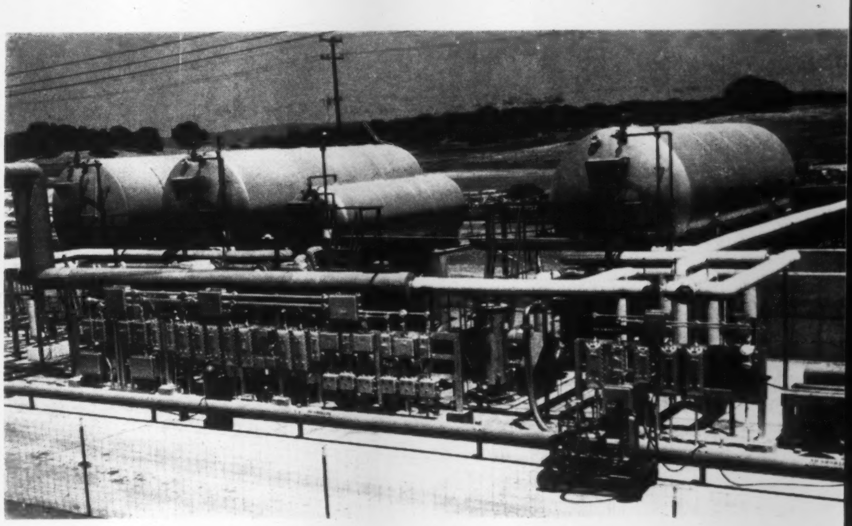
The inboard wall of the chamber will have full-length, sectionalized, folding doors to permit missile installation. The doors will be hydraulically operated. Primary control will be from the main deck level. Secondary, key-safetyed, remote control will be located near the facility control console in the blockhouse.

Two personnel access doors will be located at each working level. The double doors on the elevator side at the guidance section level will be 6 ft wide × 7 ft high. All other doors will be 3 ft wide × 7 ft high. Panic hardware will be provided on all doors.

Both the top and bottom of the test chamber will be removable for missile installation and firing. The design objective for the bottom opening will be to allow safe access to the motor chamber area for installing igniters. Insulating sleeves will be provided at points where pipe and electrical conduit pass through the chamber walls. An easily removable and adjustable baffle will be installed above the engine section to allow conditioning of critical components at temperatures higher than the upper portion of the missile and chamber.

Joints at access doors and other openings will be sealed by means of compressible type gaskets to minimize heat losses.

PIPING SYSTEMS for liquid nitrogen and liquid oxygen used in these facilities must be fabricated from noncorrosive materials. Also, precautions must be included to prevent any moisture from collecting in these systems



Conditioned air will be supplied to the chamber through two 48 × 30 in. insulated ducts at the top and will be exhausted at the bottom through a 48 × 60 in. insulated duct. Ducts will be routed through the superstructure of the test stand in such a way as to offer minimum interference at various working levels.

Use Portable Air Conditioner

Conditioned air for the test chamber will be supplied from a portable unit to be located adjacent to the test stand.

The unit itself will consist of an insulated chamber enclosing a controllable pitch vaneaxial fan, electric heating coils, and cooling coils. Access doors will be provided for maintenance or removal of components. A weatherproof cabinet, mounted on the unit, will house all controls and switchgear.

For ambient temperatures ranging between 15 and 105 F, the unit will be capable of conditioning the en-

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Why Simulate Missile Flight Conditions?

THE SIMPLEST PRINCIPLE known for the production of motive power is that employed in the rocket engine. The basic requirements are the combustion of fuel in a thrust chamber from which the resulting gases of combustion are expelled at high velocity and the reactive force provides propulsion.

Paradoxically, the application of this simplest principle involves more complexities than those found in any other type of propulsion system.

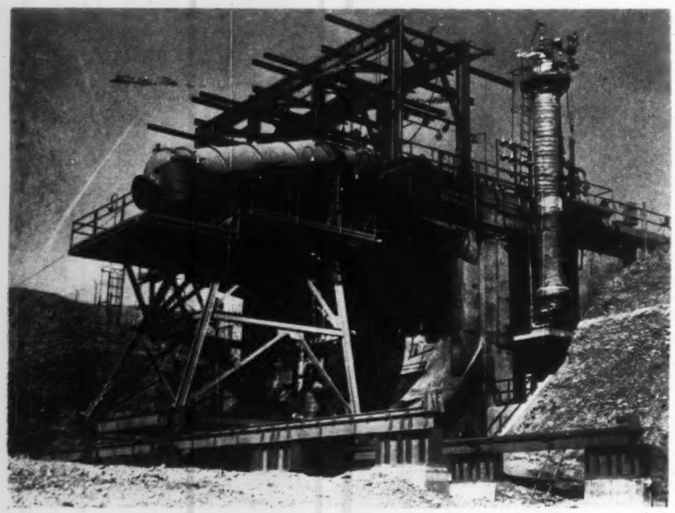
A guided missile consists of three major sections: (1) the propulsion system (for a liquid-propellant engine) consisting of the thrust chamber or motor which is fed by the propellant system of tanks, piping, sequenced valves, compressors, and other components, all of which comprise the rocket engine; (2) the guidance system of electronic computers and servo-mechanisms utilizing one or more of the several principles of guidance; and (3) the payload of a warhead (or mail, merchandise, or outer-space sampling devices) for which sections (1) and (2) serve the sole purpose of getting the payload to its destination.

Unfortunately, in contrast to the developmental processes for other types of vehicles, a free-flight test run usually results in the total destruction of the multi-million dollar prototype. Therefore, despite the acquisition of large amounts of telemetered data, such exclusive means of testing are financially prohibitive.

Simply stated, the problem of developmental and production testing is to simulate free-flight conditions as closely as possible.

Like space flight itself, comparable unknown frontiers are being encountered constantly in design and development. Temperature ranges confront the physicist, the chemist, and the metallurgist which are completely "off scale." Rapid variations confound the problem, and the whole is doubly confounded by the lack of adequate instrumentation to satisfactorily measure the values of the new frontiers. Pressures, flow rates, vibration, linear and angular velocities, acceleration, strength of materials, and coefficients of expansion all must be explored, analyzed, and considered separately and collectively. And everyone who is connected with design, research, development, or production is affected.

The architects, engineers, the mechanical (heating, piping, and air conditioning) contractors, and the specialists in their respective fields have major responsibilities.



DESIGN CONDITIONS require that high altitude test chamber be constructed for extended tests at temperatures ranging from −65 to 165 F. Conditioned air is supplied by portable unit located adjacent to test stand

vironmental chamber air from −65 F or to intermediate temperatures. The design objective is to limit the temperature difference to ±3.6 F deg from the design temperature, except during periods when the liquid oxygen tanks are filled during the heating cycle. Under this condition, the design objective is to limit the temperature difference to ±7.5 F deg.

About 16,000 cfm of conditioned air will be circulated through the chamber to maintain a temperature of −65 F at 105 F ambient temperature. Refrigeration will be provided by means of liquid nitrogen circulated through stainless steel, finned, heat exchanger coils.

For both the 24 hr pull-down and the 72 hr steady-state test periods, the liquid nitrogen flow rate will be approximately 19 gpm. Liquid nitrogen supply will be from trailers or permanently installed tanks. Total usage during the pull-down and test period will be approximately 13,000 gal, including an estimated 5 percent evaporation loss.

Heating Supplied Electrically

The heating equipment will be designed to maintain the test chamber at a maximum temperature of 165 F at 15 F ambient temperature. Under these conditions, air will be circulated through the chamber at about 17,000 cfm. Approximately 35 kw of power for electric heating will be required. Pull-up time during these conditions will be 24 hr or less.

During the final 6 hr of the 72 hr test period when the missile liquid oxygen tank is filled, the circulated air volume will be increased to 32,000 cfm and additional stages of electric heating will be used to offset the cooling effect of the vaporizing liquid oxygen. About 140 kw heating capacity will be required under these conditions to limit the temperature variations to ±7.5 F deg.

To prevent icing on the heat exchanger surfaces, an air dryer unit will be located adjacent to the air conditioning unit and will be used to remove moisture from the air in the duct circuit and chamber prior to low temperature testing. Electric heating coils will be included for continuous reactivation of the silica gel desiccant.

About 30 percent of the dry air volume will be ambient air to compensate for test chamber leakage. The unit will be connected on a bypass from the chamber return duct to the air conditioning inlet. A manually operated damper will be provided to proportion the system makeup air flowing through the dryer.

Various sensing and control devices will be utilized to regulate the performance of the air conditioning unit. Thermostats and temperature pickups will be provided at both inlet and outlet connections. In addition, a dewpoint sensing element will be mounted at the inlet which will control the liquid nitrogen solenoid valves so that they will not open until a satisfactory dewpoint is attained. The air volume will be varied within the design range by remote control of the fan blade pitch.

All controls will be interlocked to provide completely automatic temperature control while the unit is operating. An indicating temperature controller, switches, and necessary switchgear will be enclosed in the integral weatherproof cabinet. Power requirements will be 440 volts, three-phase, 60 cycles. Pickup points will be provided in the test cell for temperature recording in the blockhouse.

"Temperature Condition" Fuel

Hydrocarbon type fuel will be cooled to −65 F or intermediate temperatures from a design ambient temperature of 82 F during a maximum period of 12 hr. Liquid nitrogen is to be used as refrigerant.

An insulated fuel cooling unit will be provided, complete with necessary auxiliary equipment.° The insulated chamber will house the heat transfer units which will consist of stainless steel finned tubing and mixing blowers.

Liquid nitrogen will be sprayed into the conditioning chamber through nozzles at about 5 gpm maximum flow rate. The cold gas will be circulated continuously over the finned coils. Fuel will be circulated through the cooling unit and the 7500 gal storage vessel by means of a 60 gpm pump until the specified temperature is reached. A motorized mixing unit on the storage vessel will insure uniform temperature in the vessel. Approximately 5500 gal of liquid nitrogen will be used during the 12 hr fuel cooling conditioning period.

Solenoid valves in the liquid nitrogen supply lines will be interlocked with an indicating temperature controller to regulate the flow of liquid nitrogen, and a thermocouple will be provided at the pump discharge and at the storage tank to insure proper temperature control. Power requirements will be 440 volts, three-phase, 60 cycles.

Hydrocarbon type fuel will be heated from a design ambient temperature of 15 F to 165 F or to intermediate temperatures during a 12 hr conditioning period. Heat will be supplied by electrical immersion heaters.

The 7500 gal fuel storage vessel will be fabricated of stainless steel and will be designed for a working pressure of 15 psi. To attain the required heat capacity, five immersion heaters, rated 27 kw each, will be provided. The vessel will be equipped with a gage glass, a relief valve, and a motorized mixing unit.

The fuel will be supplied from existing storage tanks at a maximum flow rate of 500 gpm to fill the conditioning vessel. A 500 gpm pump will transfer the conditioned fuel to the missile.

Gaseous nitrogen from the existing supply line will be used for purging the storage vessel.

All controls for the fuel heating cycle will be enclosed in the same weatherproof cabinet housing the cooling cycle control. The heater controls will be interlocked with the indicating temperature controller to maintain the specified test temperature. Power requirements, again, will be 440 volts, three-phase, 60 cycles.

Provisions will be made for rain testing within the test chamber. Water spray nozzles, mounted within the chamber, will be connected to existing water piping on the test stand through remotely controlled valves. Piping and nozzles within the chamber will be protected against freezing during low temperature tests. Provisions will be made at the bottom of the chamber to remove rain test water.

Simulate Outer Space

To simulate outer space temperatures approaching absolute zero, other test facilities are employed which may utilize one or more methods of pull-down. These include standard compression-condensation systems, cascade systems (countercurrent condensation of compressed refrigerants of successively lower boiling points), sublimation of carbon dioxide in methanol, direct contact of air with dry ice, evaporation of liquid nitrogen in direct contact with the medium to be cooled, and, for extremely low temperatures, the use of helium cryostats in which helium is used as the refrigerant.

For higher temperatures, within the range of commercial refrigerants, hazardous conditions dictate the use of circulating coolants. Careful selection of the coolant is mandatory; health and safety demanding simultaneous consideration with the physical conditions of environment.

Piping Is Major Consideration

In the development and production testing of rocket engines and components, piping systems are major considerations in the design and construction of test facilities. A wide range of sizes, lengths, and materials are employed for handling liquids and gases under various conditions of pressure, flow, and temperature.

Typical propellants in the category of fuels for liquid engines are alcohol, menthanol, gasoline, and other hydrocarbon derivatives. Oxidizers include nitric acid, hydrogen peroxide, and liquid oxygen.

The properties of these fluids obviously present handling problems of storage, temperature control, valve operation, and corrosion. Stainless steel is used extensively in all systems handling propellants. While the initial cost is high, it is more economical in the long run because of minimum contamination and maximum durability.

Pressurizing systems — used to force propellants into thrust chambers during component test firings — utilize nitrogen gas at pressures of 3000 psi or more. Water systems for deluge, purging, "cold flow," flame deflectors, and other uses handle huge volumes at various pressures with pumping equipment rated up to hundreds of horsepower. Piping diameters range from a fraction of an inch to more than 16 in.

Test Solid Fuel Rockets, Too

This discussion has chiefly concerned the development and production testing of liquid rocket engines which, until recently, generally had superior performance characteristics over solid rocket engines. The solid propellant of the latter consists of a combination of nonhypergolic fuel and oxidizer in the form of a solid mass or "grain" which, when ignited at the nozzle end, burns at a steady rate and generates gaseous thrust.

Solid propellant engines are environmentally tested in much the same manner as liquid-propellant engines.

The finished grain is a finely balanced chemical mixture of specific configuration designed to rigid specifications. Its manufacture requires unique handling methods for grinding the raw materials, mixing, casting, machining and curing, each step of which calls for various types of temperature control, heat treatment, ventilation, and air conditioning.

While design and development requirements accelerate, the facilities for developmental and production testing of rockets and missiles are lagging behind. The immediate demands are for wider ranges and higher accuracies, but the tables don't go that high or that low.

We can be sure that a generous portion of the challenges presented in the field of rocketry extend and will extend to those who are directly concerned with heating, piping, and air conditioning environmental control.#

1959: A 'Better' Business Year

- ***Economists, businessmen alike express cautious optimism***
- ***Value of building contracts to be higher***
- ***Work put in place will show sizable increase***

UNLIKE *last year's business forecast marked by mixed opinions, the experts look to 1959 with almost unanimous optimism. But it is a cautious, conservative optimism.*

The leading economists envision a good year—much better than 1958—but not without its problems. While they expect a 4½ percent increase in the gross national product, they anticipate soft spots in the economy and see several pitfalls ahead.

Businessmen concur. They predict no all-out boom—rather, a stabilization at current levels and a slow but steady rise as a prelude to the 1960s, a decade that many feel will be the greatest period of prosperity in our history.

Estimates have it that the value of contracts for all types of construction this year will reach $35.6 billion, 3 percent more than 1958. This is nothing spectacular when it is noted that 1958, a comparatively poor year, showed an increase over 1957, a comparatively good one. The big difference between this year and last, according to F. W. Dodge Corp., is a sizable increase in the amount of work put in place, as measured in floor area—a truer index of the economic picture in our industry.

For a closer look at what kind of a year 1959 will be, Heating, Piping & Air Conditioning presents the opinions of several authorities.

Economists Optimistic

THE NATION'S leading economists are far more optimistic about the business outlook than they were this time last year, according to the 12th annual economists' opinion survey conducted by F. W. Dodge Corp.

They are also much more nearly unanimous in their opinions on major economic indicators than they have been in the past, reports George Cline Smith, Dodge vice president and economist.

Of the 212 participants, all but two economists expect the gross national product to rise next year above its mid-1958 level, and all but four think industrial production will show a similar trend. On the average, they expect the gross national product to reach an annual rate of $460 billion by the fourth quarter of 1959, a rise of about 4½ percent during the year. Similarly, they expect the Federal Reserve index of industrial production to reach 147 by December 1959, going up about 5 percent during the year.

In general, the economists feel that inflationary tendencies will continue, with some speed-up in price rises toward the end of 1959. The median (average) forecast is that the government's consumer price index will reach 125.5 by the end of 1959, as compared with a recently reported figure of 123.7.

While the economists clearly think 1959 will be a good year, Dr. Smith said, they recognize that "there are soft spots to be bolstered and pitfalls to be avoided." Among those most frequently mentioned are:

- Inflation and runaway boom, with a counteraction sometime after 1959
- Possible cutting off of the recovery by excessive credit restrictions
- Prospects for a relatively slow decline in the number of unemployed
- A continuing profit squeeze facing many businesses
- Constantly rising wage rates
- Rising government deficits, high taxes, and restrictive tax structure.

In his analysis, Dr. Smith concluded: "The economists are saying, quite clearly, that they think 1959 will be a good year, substantially better than 1958, although it will not be without its problems."

No All-Out Boom

BUSINESS next year will show marked improvement over 1958, say 94 percent of the company presidents surveyed by Dun's Review and Modern Industry.

But the optimism expressed by the 109 company heads is considered and cautious and often qualified by comments that "no all-out boom should be expected."

None predicts a tremendous upsurge of business in 1959. More likely, they are inclined to think business will stabilize at or slightly above current levels and the national economy will continue a slow but steady rise. 1959 is seen by the men who head many of the 500 largest companies in the U.S. as a year of gathering momentum—a year of transition to the 1960s when, barring war, genuine boom years may develop.

Those who would hazard estimates of their sales gains in 1959 anticipate an average 10 to 13 percent increase. But they point out that the improvement is being measured against "a very poor year." Other companies look for "modest or gradual" improvement and a year that is "slightly better in billings—much better in bookings."

Almost two-thirds of the respondents to the survey expect to end next year with substantially improved profit margins—with increases ranging from 1 to 5 percent (most often mentioned) to as high as 50, 70, and 100 percent in a few cases.

The real net gains of 1959, say the presidents, are more likely to develop from such recession-bred measures as cost-cutting, increased efficiency, modernization, tighter scheduling and inventory control, and new product development when these and similar programs begin to pay off. And management, which now counts these economies as a recession "blessing," intends to continue them next year in an effort to strengthen profits in the face of rising costs and stiffening competition.

According to the survey findings, business will be confronted with three crucial problems in the year ahead: the continuing profit squeeze, rising costs, and the need for bigger and better sales and marketing forces.

It's Up to the Contractor

PROSPECTS for the building industry for 1959 seem better than the realization experienced in 1958. Whether it will be a profitable year or not for the individual piping contractor will depend upon the care with which he estimates work and upon his inclusion in his proposal of a fair overhead and profit. These thoughts are reflected by Joseph C. Fitts, secretary, National Certified Pipe Welding Bureau.

"Rumors indicate that much of the work taken in 1958 was at a low profit margin. The remedy for this situation exists in the minds of the individual contractor and we can only hope that, seeing a bluer sky in 1959, he will be encouraged to ask for the margin which his company should have to insure profitable operation," says Mr. Fitts.

ASA Focusing on HPAC

MANY of the 413 national standardization projects underway at the American Standards Association are of direct and indirect interest to the heating, piping, and air conditioning field, according to G. H. Hussey, Jr., ASA managing director.

Four of these projects which have a direct interest are the B78 project for heat exchangers, B76 on cooling towers, the American Standard Code for Pressure Piping (B31.1-1955 and B31.8-1955), and a numbering system for refrigerants which has been newly submitted to ASA for approval as an American Standard.

The ASA committee B78 is in the process of being organized; committee B76 is still studying areas where standards would be feasible for cooling towers and the revision of the code for pressure piping envisions a breakdown of the work into several sections, each section to be submitted for approval as American Standards.

The proposed numbering system for refrigerants has been submitted to ASA by the American Society of Refrigerating Engineers.

$70 Billion For Building

CONSTRUCTION VOLUME in the U.S. in 1959 will probably top the $70 billion mark for the first time in history, Johns-Manville Corp. predicts.

New building will exceed $50 billion and might go as high as $52 billion, says W. R. Wilkinson, company vice president. An additional $20 billion will be spent on modernization, remodeling, maintenance, and repair of existing structures, he said.

The construction industry this year has been the biggest single prop of the national economy. New construction in 1958 will total approximately $49¼ billion, compared with $18½ billion in 1957.

$475 Billion '59 Economy

PRUDENTIAL Insurance Co. predicts a $475 billion economy for the U.S. in 1959—$34 billion greater than the total of goods and services produced in 1958—with all major areas of national output higher.

The company's annual economic forecast states that the improvement in productivity combined with the existence of some unused capacity during the first half of the year will exercise a restraining influence on prices.

However, it added that toward the end of 1959 the economy will approach capacity operation and "it will be at this point that the danger of renewed inflation will become acute."

Oil to Bounce Back

THE COMMERCIAL-INDUSTRIAL oil heating business has excellent prospects, predicts R.H.L. Becker, managing director, Oil-Heat Institute of America, Inc. Even though industrial

1959: A year to gather

construction may lag, other private and public construction projects are expected to bring up the total of physical volume 4 or 5 percent over 1958.

Shipments of burners for industrial and commercial applications in 1958 were off about 10 percent from 1957. But the recession hangover had much to do with this. It is expected that 1959 will bounce back high enough to equal the last seven-year average which was relatively high.

See Demand for More Coal

THE DEMAND for bituminous coal closely follows general business trends. The coal industry, anticipating a continued advance of business in 1959, expects to produce 455 million tons of coal during the year, an increase of 13.8 percent over its output of some 400 million tons in the recession year of 1958, according to Tom Pickett, executive vice president, National Coal Association.

A substantial part of this expected increase is closely tied, of course, to the prosperity of the heating, piping, and air conditioning industry. The use of coal for heating and industrial steam is expected to increase slightly, to 106 million tons.

Coal's cause will be aided by the use of modern, efficient coal handling and firing equipment and the missionary efforts of the engineers of NCA and its affiliate, the Bituminous Coal Institute, says Mr. Pickett.

Gas Expansion to Continue

THE GAS INDUSTRY in 1959 will continue its present dynamic expansion, its progress further stimulated by the business upturn and by increased building activity, according to the American Gas Association. C. S. Stackpole, AGA managing director, reports that investment of more than $2 billion in plants construction is planned by utilities and pipeline companies in the coming year. This expenditure, in 12 months, will add approximately 10 percent to the gas industry's plant investment, already the nation's fifth largest. Continuing at an accelerating pace, this new construction is expected to nearly treble the industry's physical facilities as early as 1970.

Plant expansion is bringing augmented gas service and new gas supplies to large areas of the country—particularly the Pacific Northwest and the West Coast at the present time. During 1959, pipeline construction will be underway to bring natural gas to Florida, the last major U.S. area yet to be supplied.

Ship More Steel Pipe in '59

THIS YEAR'S shipments of butt weld pipe will increase 15 percent or so over 1958, says George D. Lain, research engineer, Committee on Steel Pipe Research, American Iron and Steel Institute. He expects that a greater proportion of this increase in shipments will be made during the first half of the year, as many of the purchasers may anticipate that there might be a work stoppage in the industry when the new union contracts are scheduled for renewal on July 1.

Copper to Play Major Role

COPPER TUBE and its related brass and bronze fittings will continue to play a prominent role in the heating, piping, and air conditioning field in the year ahead, states T. E. Veltfort, managing director, Copper & Brass Research Association.

Encouraging prospects for nonresidential construction, coupled with continued emphasis on remodeling and air conditioning of existing buildings, indicates a good year for the heating, piping, and air conditioning industry, he says.

Copper tube is especially prominent in air conditioning, baseboard heating, radiant heating and heat pump installations, as well as in the less conventional solar heating. A utility executive has set 30,000 as the number of heat pump installations in commercial and industrial buildings alone in the U.S.

Interesting, too, as a "sign of the times" is the recent notice that a New York mechanical (heating, piping, and air conditioning) contractor will install air conditioning systems in all types of new or old buildings under a leasing arrangement of two to seven years. (Heating, Piping, & Air Conditioning, November 1958, p. 119.) Also, a major maker of air conditioning systems is promoting the idea of designing new schools around central air conditioning.

Nuclear Outlook Good

SEVERAL NUCLEAR power stations ranging in electric capacities from intermediate ranges of around 40,000 kw upwards to 180,000 kw will proceed through the advanced stages of construction in 1959 and will go into operation in 1960. These will require substantial increases in requirements for products of the heating, piping, and air conditioning industry over those in 1958, says Charles Robbins, executive manager, Atomic Industrial Forum, Inc.

Industry has been steadily increasing its investment in the nuclear power field, and the Federal Government's budget for atomic energy—civilian and military—is at a peak. While experience gained from previous construction of nuclear power plants has revealed that costs are higher than anticipated, there remains a sturdy conviction that costs will come down over the next several years to a point where nuclear power will be competitive with other fuel forms.

momentum for the '60s

Overseas the six western countries of Europe have combined through Euratom in a program to build 1 million kw of nuclear power by 1963. It is estimated that this will cost $350 million and negotiations are underway to provide $135 million of this from the Export-Import Bank. If successfully concluded, this should mean that U.S. industry will produce more than one-third of the products and services for Europe's basic nuclear systems.

The past year has seen U.S. technology advance in the eyes of other parts of the world, with the result that the prospects for the sale abroad of U.S. produced nuclear products and services have improved. This, together with every indication that the U.S. will push ahead aggressively to achieve economically competitive nuclear power, suggests a rising trend of demand for products for the nuclear industry in the years ahead.

Welding Picture Bright

THE VALUE of new and improved welding equipment and supplies sold in 1959 will exceed $1 billion if present indications are accurate, says Fred L. Plummer, national secretary, American Welding Society. Accelerated welding research will uncover new materials and new welding processes and techniques. Many of these will be used by those responsible for the diverse types of piping installations.

The installation of new facilities for the development of nuclear power will involve the use of new alloys, new metals, sometimes in great thicknesses. High temperature operations of missiles, rockets, and airplanes in supersonic flight will require the use of new heat resistant materials, often in thin gage, lightweight construction. More conventional uses of pipe in transmission lines, chemical, power, and petroleum industries, commercial and industrial buildings, and other applications may be expected to expand.

These developments will rely upon welding to a greater extent than ever. Many newly developed materials cannot be joined as satisfactorily or as economically by any other means than welding, according to Mr. Plummer.

Similar factors apply to air conditioning. It is increasingly evident that air conditioning is becoming a normal way of life in America. Offices, stores, and buildings must be air conditioned if they are going to attract buyers and tenants. This means more piping, more welding, and more skilled workmen.

LP Gas Future Optimistic

ESTIMATES are that overall LP gas sales increased, during 1958, by 440 million gal (or about 6 percent over 1957's total of 6.9 billion) to a new high of 7.3 billion gal, according to Howard D. White, executive vice president, Liquefied Petroleum Gas Association.

1959 sales will reach past 7.8 billion gal with the number of total customers approaching the 13 million mark, predicts Mr. White.

Stokers to Pick Up

"OUR INDUSTRY along with many others experienced an upturn in the third quarter of 1958, but this did not carry through into the fourth quarter with the same momentum that we had anticipated. We do not look for an additional upturn until the second quarter of 1959, and expect that business will hold at approximately the same level until April or May," states L. C. Dubs, president, Stoker Manufacturers Assn.

"Construction activity has slowed down considerably during the severe winter months in the northern sections of the country and since the major part of new construction has been centered in the north central and northeastern sections, we cannot look forward to much real improvement until the weather opens up and construction can proceed at a more normal pace.

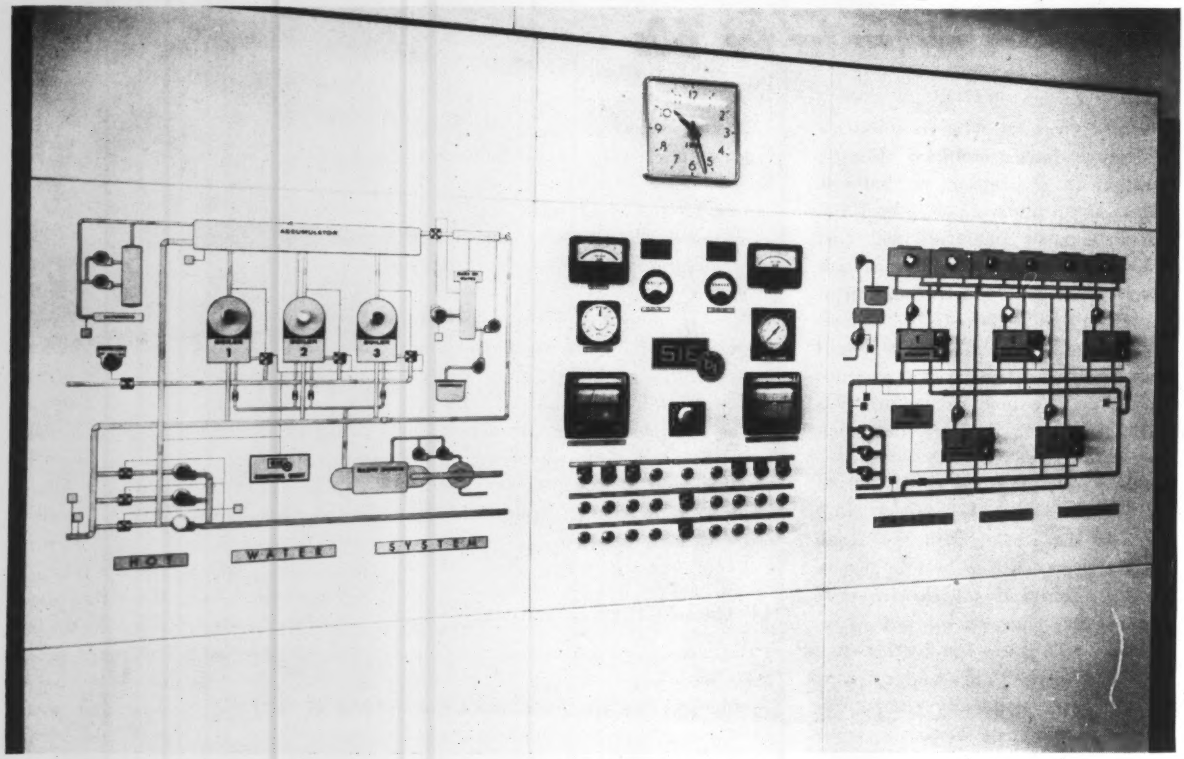
"For the year 1959 as a whole, however, we look forward to improved business and believe that the prospects for a substantial increase in volume are better than they have been for the past five years. We say this, because more and more people are taking a second look at coal as a fuel for their heating and power plants," Mr. Dubs concluded.

See Strong Gas Markets

THOSE MEMBERS of the Gas Appliance Manufacturers Association who serve the industrial, commercial, and institutional construction and modernization fields look to 1959 as a year of impressive gains, according to Harold Massey, GAMA managing director.

"In some lines we will move to new all-time peaks. In others, expectations are for totals approaching the records set amid the unprecedented industrial expansion of the 1955-1957 period. The expansion and improvement programs budgeted by our industrial and commercial customers generally seem subject to change only on the 'up' side. School construction and other public works will be at high levels.

"Industry's continued emphasis on cutting costs of production and its growing recognition of the key role played by heating and air conditioning in achieving this objective will continue to boost demand. Plant changes brought about by the advent of new products and processes are among other favorable factors." ≠



Logic circuit switching concept—used for years in digital computers—finds new applications in HPAC systems. The result:

Unique Control System Regulates Air Conditioning, Heating

. . . in several buildings from central plant, insuring 42 F water for cooling, 350 F high temperature hot water for heating. Benefits are low installation cost, minimum maintenance, high reliability.

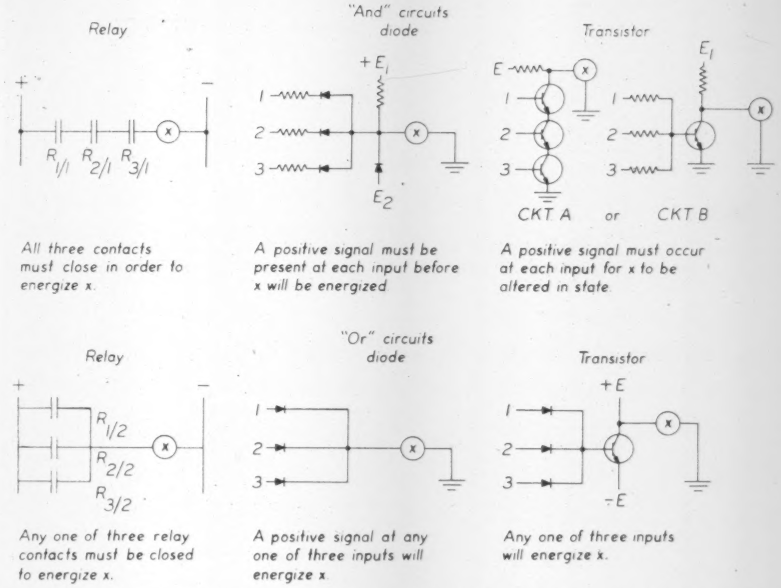
BY JOHN F. PINK
Senior Engineer
Southwestern Industrial
Electronics Co.

MANY new techniques for plant control have been incorporated in the facilities for Dresser Industries constructed west of Houston. This center, to consist of nine buildings, has 300,000 sq ft under roof of which 90 percent is air conditioned the year 'round. Heating is supplied by high temperature hot water at 350 F.

These buildings are served by a central refrigeration plant containing five 500 ton compressors, and three 200 hp boilers.

The control system for placing these units on the line in sequence and for modulating their outputs is unique. In the first place, a transistorized logic circuit is used to sequence the several compressors. This is believed to be the first time that this equipment has been used for such an application. Future use of these techniques can be expanded to all types of automatic sequencing operations where maximum reliability and low wattage drain are important. Also, the control system has been designed for easy expansion by future additions. It is equally easy to incorporate safety interlocks.

The concept of logic circuit switching has been used in digital computers for the past 10 years. Only



All three contacts must close in order to energize x.

A positive signal must be present at each input before x will be energized.

A positive signal must occur at each input for x to be altered in state.

Any one of three relay contacts must be closed to energize x.

A positive signal at any one of three inputs will energize x.

Any one of three inputs will energize x.

1 TYPICAL SWITCHING CIRCUITS explained here. Relay of circuits and solid-state devices are shown for same function

recently has it been used with solid state devices such as transistors in control circuits.

It has several advantages. The most outstanding of these is the absence of moving parts and thus the elimination of wear or maladjustment. There are no contacts to be furnished or replaced, no limits to the number of operations, and a long life with minimum maintenance can be expected of the solid-state devices. Fig. 1 shows typical switching circuits and shows the circuits of relays and solid-state devices for the same function.

The largest current level readily available from transistors is 13 amps at 40 volts d-c. In the near future, higher voltages will be possible at this current level for such transistors. The reliability of transistors and diodes is far in excess of 100,000 operations. The space and wattage required with transistors are low. Standby batteries can be used to guarantee continued operation of the controls (and safety devices) in case of a power failure. The lower voltage at which transistors operate results in less stress on electrical components, and this is also a decided advantage. Finally, the lower wattage produces lower temperatures and a resulting longer life of components. The ease with which additional circuitry can be added to this sequence device is a further advantage of the solid-state logic system. All the safety shutdowns and limits in the controls of the boiler or compressor can very simply be added to the logic circuit.

The system may be applied to a boiler installation, for example, by using limit switches which conduct a 10 volt d-c signal to an "and" unit in the logic circuit to allow startup of the boiler. If one of the necessary safety conditions is missing, the boiler either fails to start or is shut down from the control circuit.

Additional high limit temperature safeties can be provided in the temperature controller installed on each boiler to modulate the fuel valve. Adding these circuits to the logic circuit is very economical. The addition of the logic circuitry to a solid-state control merely adds a few transistors or diodes which can be mounted in a few cubic inches of space next to the existing sequencing circuit.

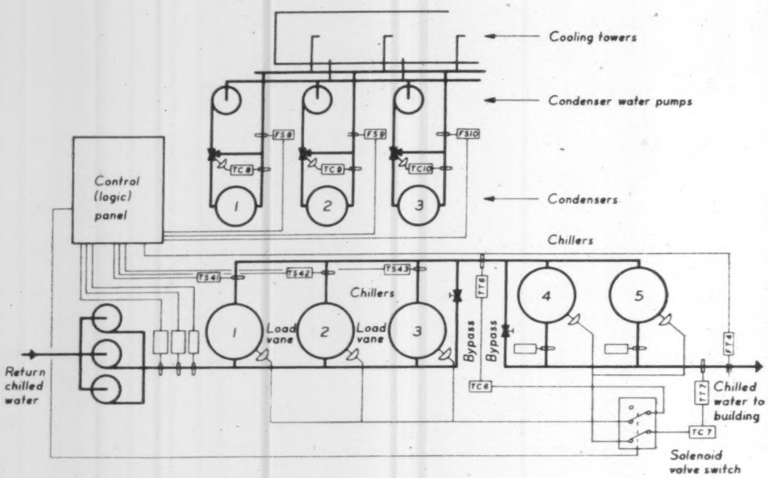
How Dresser's System Works

Now, a description of the particular installation at the Dresser Electronics Center: Fig. 2 is the flow diagram of part of the chilled water system. The delivery of chilled water from the plant is required at 1500 gpm

● The principle of a new method for controlling heating, piping, and air conditioning systems using transistor circuits is presented here. This system makes it possible to start several compressors in any desired sequence, depending on the load. Safety controls for boilers and other equipment are also operated by this new method.

Some of its features are low wattage requirements, easy expansion of existing facilities, and a high degree of reliability. How a typical control system for an installation with five 500 ton air conditioning compressors and three 200 hp boilers operates is also presented.

Mr. Pink is a graduate engineer from the University of Manitoba and has a Master of Science degree from the University of Pennsylvania. He is a registered professional engineer in the States of Texas and New Jersey. With the duPont Co. for 11 years, he assisted there in the development and installation of analyzers and instruments for measurement and control. He assumed his present position in 1957.


Cooling towers
Condenser water pumps
Condensers
Chillers
Control (logic) panel
FS8
FS9
FS10
TC8
TC9
TC10
1
2
3
TS41
TS42
TS43
Chillers
Load vane
Load vane
1
2
3
4
5
Bypass
Bypass
TT6
TC6
FT4
TT7
TC7
Return chilled water
Chilled water to building
Solenoid valve switch

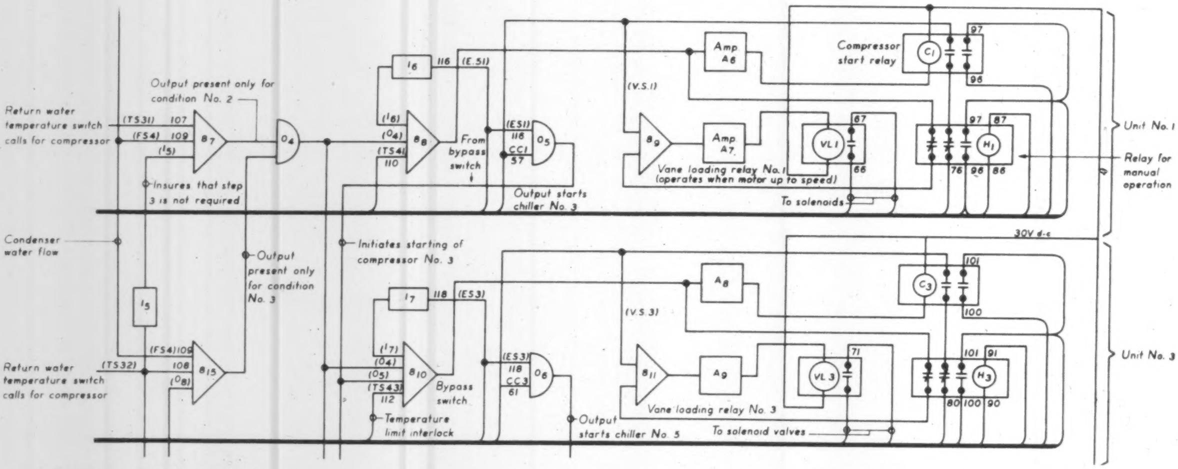
2 FLOW DIAGRAM of part of Dresser chilled water system shows relationship of controls in supplying 4500 gpm of chilled water at constant 42 F delivery temperature

and at a constant delivery temperature of 42 F. To maintain this delivery temperature under varying weather or load conditions, first two, then three, and finally five compressors are brought on the line.

The temperature switches are set in the return water line to start the compressors in proper sequence as the temperature rises. To obtain final control, however, outgoing (supply) temperature is measured and controlled by TC7 to 42 F by modulating the refrigerant throttling vanes in the compressors via the solenoid valve switch. The vanes will modulate the compressor capacity over a range of 10 to 100 percent. The efficiency of the compressor varies, of course, over this range.

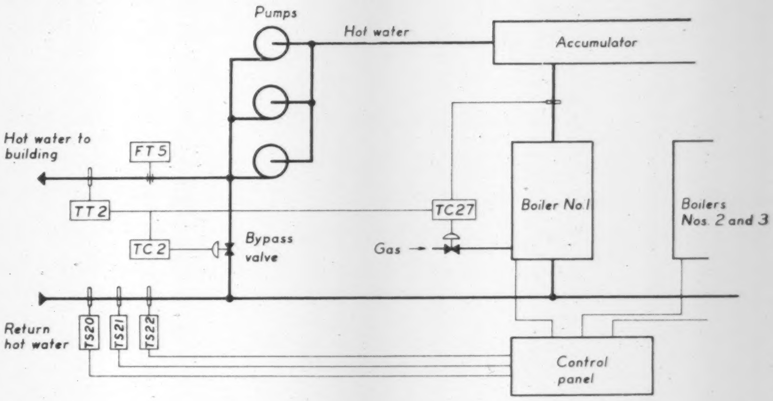
The operation of all five compressors presents a problem of requiring the control of the intermediate chilled water temperature so that the load is distributed equally between all five units. A second temperature controller, TC6, has been added to take care of this. Solenoid valves, operated from the control circuit, bring TC6 into service—through the solenoid valve switch.

The condenser water for the refrigeration units is modulated by a temperature controller which measures the condenser water temperature leaving the condenser. This measurement is preferred in the refrigerant line leaving the condenser. This preference is in keeping with the control philosophy of measuring directly, and controlling from, the important variable. By this mode of control, the


Return water temperature switch calls for compressor
(TS31)
107
(FS4)
109
(I5)
B7
Output present only for condition No. 2
O4
Insures that step 3 is not required
I6
116
(E.51)
(I6)
(O4)
(TS41)
110
B8
From bypass switch
(ES1)
116
CC1
57
O5
Output starts chiller No. 3
(V.S.1)
Amp A6
Amp A7
B9
Compressor start relay
C1
97
96
VL1
67
66
Vane loading relay No. 1 (operates when motor up to speed)
To solenoids
H1
97
87
76
96
86
Unit No. 1
Relay for manual operation
30V d-c
Condenser water flow
I5
Output present only for condition No. 3
Initiates starting of compressor No. 3
Return water temperature switch calls for compressor
(TS32)
(FS4)109
108
(O8)
B15
I7
118
(ES3)
(I7)
(O4)
(O5)
(TS43)
112
B10
Bypass switch
Temperature limit interlock
(ES3)
118
CC3
61
O6
Output starts chiller No. 5
(V.S.3)
A8
A9
B11
Vane loading relay No. 3
To solenoid valves
C3
101
100
VL3
71
H3
101
91
80
100
90
Unit No. 3

3 CONTROL CIRCUIT for sequencing and automatic startup of two compressors shown diagrammatically. System regulates chilled water temperature and flow and condenser water flow before startup can occur. Compressors are started in sequence so motor starting currents will not overload electric circuits

4 PART OF HTHW heating system illustrated in this flow diagram. Cascade control system minimizes problem of overheating, underheating at particular load levels by measuring and modulating delivery water temperature



operation of the refrigerant cycle and the compressor would be independent of condenser tube scale condition, and maximum operating efficiency is attainable at all times.

A further example of this philosophy is the attachment of a voltage transformer on the input lines to the motor to indicate motor up-to-speed, rather than using auxiliary contacts in the starter.

The control circuit for sequencing and automatic startup of two of the compressors is shown diagrammatically in Fig. 3. Specified conditions of temperature and chilled water flow, as well as condenser water flow, are all prerequisites before startup can occur. The compressors are then started in sequence so that the motor starting currents will not load the electric circuits simultaneously.

The circuit operates like this: The signals—from chilled water flow, and temperature switch (TS31), together with a signal that the next larger arrangement of compressors is *not* required—enter "&7" and permit an output. This is introduced into "O4" and then to "&8." This "&" will provide an output signal if the temperature of chilled water leaving the chiller is within limits and the bypass switch is open.

This output operates the amplifier and the compressor starter relay. When the compressor comes up to speed, a signal appears: (VS-1) to "&9." This "&" will then cause the vane loading relay to operate, if the controls are set to "automatic." (This condition closed the appropriate contacts in the relay.) The compressor is then "on the line."

HTHW Posed Special Problem

In the high temperature hot water heating system, water is raised to 350 F and kept under 160 psi pressure by a nitrogen gas system to prevent flashing. Heat exchangers in the various buildings convert this to lower water temperatures and flow rates.

At the refrigeration plant, the supply is maintained by three boilers, each discharging into a single large header tank. The water level in this tank must be maintained. The boilers must each come on the line as they are required. The need for additional boiler capacity is detected by the return water temperature. Fig. 4 is a flow diagram of part of this heating system.

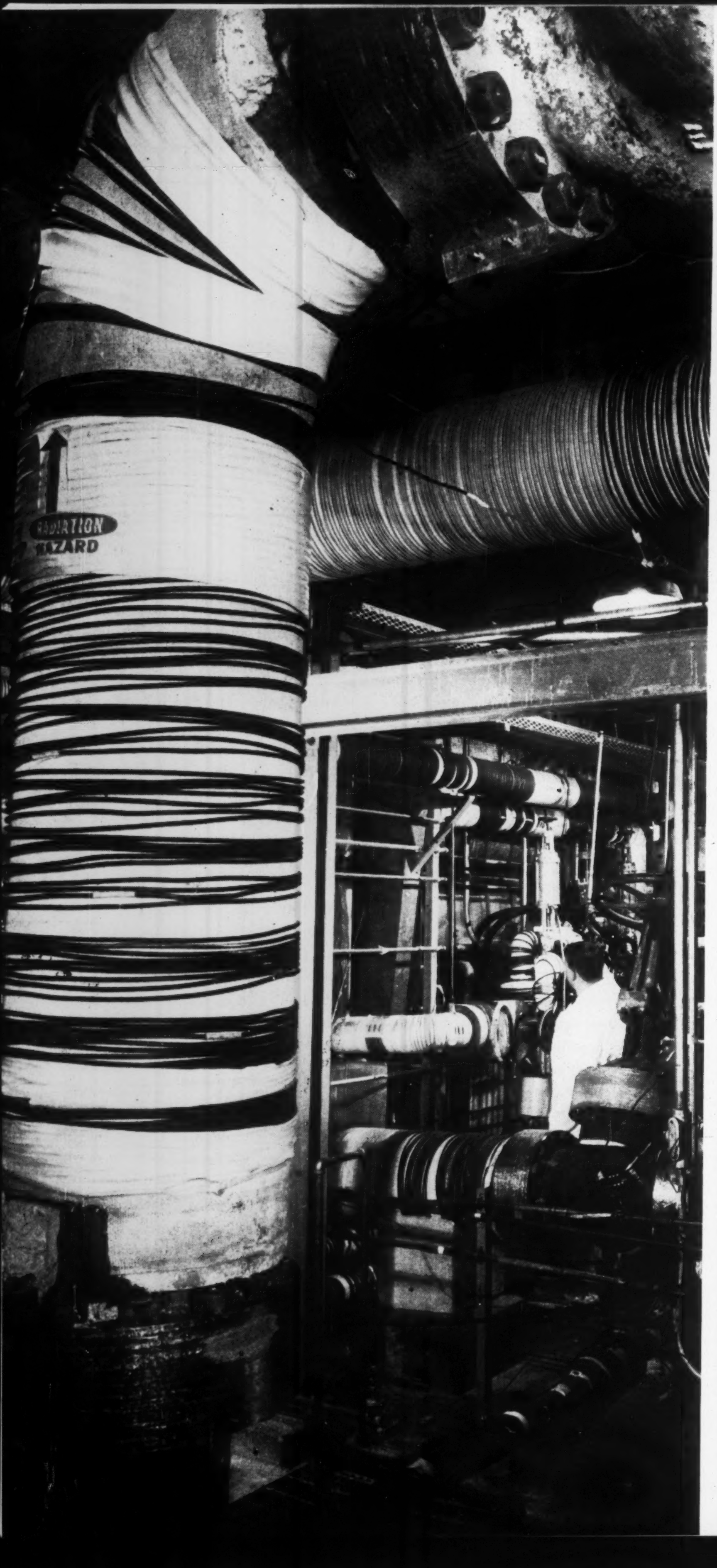
A special problem was encountered in the control design for the HTHW system. Since there is a minimum fire level for each boiler of 20 percent of capacity, there will be overheating and underheating at particular load levels where too much load exists for one boiler, and yet not enough for two boilers.

To minimize this problem, a cascade control system was installed so that the resulting delivery water temperature after the bypasses is measured and modulates the bypass valves. At the same time, this exit temperature alters the set point of the boiler temperature controllers so that a minimum variation in supply temperature occurs.

Measuring total liquid flow of hot and chilled water are two electronic flow computers, FT4 and FT5. These instruments receive differential pressure signals and automatically perform the square root and multiplication calculation to display the flow rate. They also incorporate integrators which read out total flow tubes, servo-operated slidewires, etc.

Design for Performance, Cost

The choice of instruments in this work was made completely with the performance and economy viewpoints in mind. As a result, several pneumatic instruments have been installed, as well as the electrical pressure and temperature switches. The product is a very simple, practical control system that should provide a maximum in reliability and flexibility in future plant operation. The first 10 months' operation has involved no maintenance of the electronic controls. ǂ



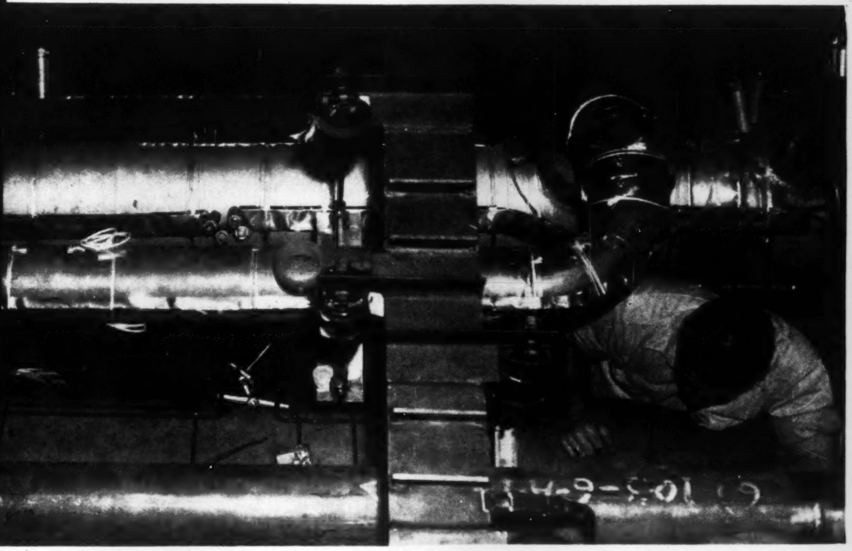
Atomic Age Stiffen

BY RAPHAEL S. LUBOMIRSKI
Senior Nuclear Engineer
Holmes & Narver, Inc.
Engineers and Constructors

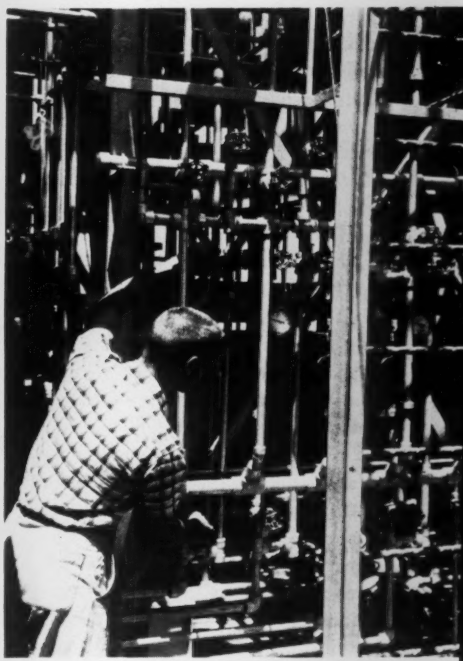
THE DEVELOPMENT of nuclear power systems has brought into focus a wide range of new service requirements and associated materials problems. A very important part of the nuclear power plant is the pressure piping system and its metallurgy.

This importance stems not from radically different design conditions, but primarily from stringent safety

RADIATION HAZARDS are marked at Atomics International's organic moderated reactor experiment setup. Shown here are coolant pump suction and discharge lines. Note flanged construction. Piping and major vessels are mild steel, heated with induction coils



PRIMARY PIPING LOOP for Atomics International's sodium reactor experiment appears in foreground, entering heat exchangers at right. Secondary sodium line leaves exchanger, conveys hot liquid sodium to steam generator. Piping is 6 in., Type 304 stainless. Note welded construction, large expansion loops



SERVICE PIPING at sodium reactor experiment shown here. System's chief function is to cool pump and valve seals, fuel storage area, pipe galleries, concrete shielding

Radiation Hazards Safety Standards

. . . for design, fabrication of nuclear piping systems

considerations applied to piping confining radioactive fluids. Whereas in a conventional power plant a failure of the pressure system will at worst result in a release of water and steam, in a nuclear plant such a failure creates a series of other potential hazards. Depending on the nuclear reactor steam generating medium, these potential hazards may be:

1) A release of highly radioactive materials and contamination of the surrounding area

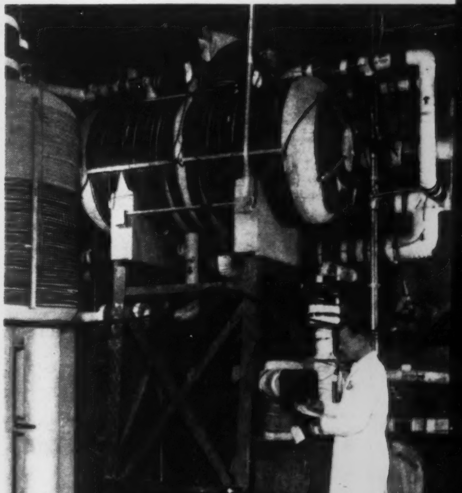
2) A release of highly chemically reactive materials initiating combustion or even explosions or detonations

3) A release of energy in the form of pressure waves or missile fragments endangering the integrity of the reactor containment structure.

The absolute safety of the pressure piping system—not only against a major rupture, but also against small leaks—is the primary concern in nuclear power plant design. This consideration gives only a narrow margin for error in the selection and fabrication of pressure piping for nuclear applications.

What *Is* Radiation Damage?

While requirements from the standpoints of temperature and pressure are essentially the same in nuclear as in conventional power plants, the



OPERATOR can safely take reading close to coolant lines in organic moderated reactor experiment because of low level of radioactivity induced in organic coolant

● In designing piping systems for nuclear power applications, the engineer must consider carefully the metallurgy of the piping materials used in order to prevent failure due to radiation damage. This irradiation usually increases the hardness of metals, having an effect much like annealing. Cobalt, manganese, and similar elements must be minimized.

To prevent corrosion, it is suggested that Type 347 stainless steel, stabilized with niobium, be used considering weldability. Leakproofness along the stem of the valves in the system is a must. Bellows, canopies, labyrinths of seal rings, and frozen seals of the circulating fluid are suggested methods for preventing leaks.

Mr. Lubomirski was educated at the University of Danzig and obtained his Master of Science degree from London University. Arriving in the U.S. in 1952, he was employed by Purex Corp. as a process engineer in its research department. He later assumed his present position and has been active in the industrial applications of atomic energy and in the petrochemical field. He has collaborated in extensive studies for Westinghouse Electric Corp. by Holmes & Narver on containment hazards inherent in nuclear generation of electric power.

nuclear reactor introduces a new factor: *irradiation*. When speaking of irradiation, or rather radiation effects, one has primarily in mind the detrimental effects of irradiation; i.e., the radiation damage.

Irradiation at low temperatures invariably increases the tensile and yield strengths and hardness of metals. Low temperature irradiation is therefore similar to cold working of a material. When the temperature is high enough, the displaced atoms have an increased tendency to move around and fall into one of the vacancies in their vicinity. This is similar to annealing or stress relieving.

Irradiation of metals at low temperature results therefore in embrittlement, which increases their strength, but at the same time reduces their ductility. This effect of irradiation is important because ductility is a built-in safety factor against rupture. (It is the ability of the material to relieve imposed stresses by plastic deformation rather than by brittle fracture.) Irradiation embrittlement has been investigated extensively and reviewed in detail in various publications[1,2,3]. The major property changes in stainless steels, listed in the Reactor Handbook, are as follows:

1) Doubling of the yield strength, 20 percent increase in tensile strength, and 50 percent reduction in elongation at integrated flux exposures of 10^{20} nvt and a temperature of 20 C

2) Approximately 100 points Brinell hardness number increase at integrated flux exposures of about 10^{20} nvt temperatures of 20 C

3) No significant hardness change at the same integrated flux levels but at a temperature of about 200 to 280 C.

Argonne National Laboratory investigated a high grade carbon steel, SA-212 Gr. B, in a fast flux of 4×10^{19} neutrons per sq cm at 140 F. A welded specimen gave the following results:

	Yield strength, psi
Unirradiated	43,500
Irradiated	71,000

A second effect of irradiation on metals which must be considered is chemical composition. Certain chemical elements when exposed to neutron fluxes become radioactive with very long half-lives. Such elements are cobalt, manganese, and tantalum.

They have to be kept at absolute minimum in piping exposed to irradiation. This imposes restrictions on material specifications. Other chemical elements such as cadmium or boron have the property of absorbing neutrons and this can affect the nuclear design of the plant. They are, however, of minor interest here.

What Effect on Nuclear Piping?

Having reviewed the general effects of irradiation on metals, let's examine more closely how this affects piping in a nuclear plant.

Radiation damage is proportional to the intensity of neutron flux. Fortunately, the only place where high fluxes are encountered is in the reactor core or in the immediate vicinity of the core. In other parts of the nuclear power plant, neutron activity is very slight.

Piping penetrating the reactor vessel is for the primary loops and instrumentation. The loops may carry only water, but they may also contain highly radioactive suspensions or solutions in water or liquid metals. The primary concern of the engineer and operator is to keep these fluids confined. Diameters of pipes for the primary loops of 14 to 30 in. are quite common in nuclear power plants. A rupture therefore may result in thousands of pounds of highly radioactive fluid being ejected in a matter of seconds.

A pipe which becomes brittle through irradiation may form a crack or number of cracks or shear off completely with limited material deformation around the opening. On the other hand, piping of high ductility will redistribute the stress pattern around an opening by deformation of the adjacent material. This will reduce the tendency of the original crack to spread and propagate, and may give the necessary time for the confinement of the contamination.

Radiation damage is not the only factor which may reduce ductility in steel. The need to confine the radioactive materials within the circulating system makes it of primary importance so that other factors affecting ductility are not overshadowed by the possible damage resulting from radiation alone. Among these other factors are hydrogen embrittlement, low temperature pressurization, precipitation and transportation, stress corrosion and cracking, intergranular corrosion in unstabilized steels, corrosion by highly corrosive fluids (flowing rapidly and removing protective oxide film), and knife-line corrosion.

Corrosion Is Major Problem

Corrosion is one of the most serious problems in nuclear power plants. Each type of nuclear reactor has a different corrosion problem. The pressurized water reactor, for instance, which is the most popular power reactor type in the U. S., has the problem of radiolytic gas formation. This source of oxygen is a stress corrosion factor, and although extensive purification systems are installed to remove oxygen, hydrogen, and chlorides, stress corrosion will occur.

Intergranular corrosion also presents a problem. It has been suggested that Type 347 stainless steel, stabilized with niobium, may be superior to the Type 304 because the welded and heat affected areas of the unstabilized Type 304 are subjected to granular corrosion. Type 304, however, is difficult to weld, and 316, which is better stabilized than 304 and less difficult to weld than 347, might be a better choice.

In reactors where liquid sodium is the cooling medium, chemical attack on the metal has to be considered. Austenitic nickel-chromium steels are suggested for this service, with Type L nickel tubing for the heat exchangers. Chromium-molybdenum ferritic steels seem to perform satisfactorily with liquid bismuth.

Corrosion coupled with erosion presents a most severe problem in homogeneous reactors operating with a suspension of solids in water. The pressurized water in-pile tube presents a special case, where the major problem is weldability. For this service Type 347 stainless steel, "Inconel X" (hot rolled and aged), and "Discaloy" are suggested.

Hydrogen embrittlement ought to be considered in pressurized water reactors, where radiolytic gas is formed. Austenitic steels are considered immune to hydrogen attack and Type 304 steel with steel weld metal of Type 308L or 347 is considered safe for the assembly of the primary coolant system.

Mechanism of attack is usually a combination of several factors, which may be catalyzed by radiation. Quite often a conclusive solution for all factors involved is not possible. Pilot plant scale tests are therefore applied whenever possible to determine the most suitable material for a specific service requirement.

Valves Must Be Same Quality

Valves for the primary loop systems must be the same quality as the pipe. Corrosion resistance and leakproofness are the two basic requirements. In many instances the valves must operate by remote control and without periodic inspections. A malfunction or failure of a valve in the pressure piping of a nuclear reactor may create the same potential hazards as the failure of the piping itself.

One of the most difficult considerations in valve design is to insure its leakproofness along the stem. Since conventional packings and gaskets are of organic materials which disintegrate under intense radiation and heat, other means have been devised to seal the valve stem. Such safeguards against stem leakage are bellows, canopies, labyrinths of seal rings, and frozen seals of the circulating fluid (as in the case of liquid metals).

These contrivances create problems of their own. The operation of bellows, for instance, depends upon the elastic range of the bellows materials. Since many cycles of operation at elevated temperatures are usually essential, the range of movement of the bellows must be restricted to insure continued elasticity, thus leading to inordinate size of this component. Where the temperature of the fluid is high, packing glands must be provided with cooling arrangements to insure against premature disintegration.

The use of forgings against castings for the bodies of the valves has been given much attention. Both have shortcomings of which porousness in castings and cost in forgings are the most often quoted.

In selecting nozzles for the pipe-to-vessel connections, thermal stresses arising from joining materials of different thermal expansion coefficients should be borne in mind. From the standpoint of complete safety, nozzles should be made of the same material as the vessel. For instance, a stainless steel piping system and a stainless clad carbon steel reactor vessel should have stainless clad carbon steel, rather than solid stainless steel nozzles, although the latter would be more economical from the material and welding standpoints.

Simple Code Rules Inadequate

Because nuclear applications introduce potential structural deterioration due to radiation, and also severe demands on corrosion resistance, simplified code rules are inadequate.

J. J. Murphy[4] suggests that fabricated pressure piping for nuclear applications be divided into four classes. This division covers not only design limitations but also fabrication, erection, and inspection specifications for piping and butt welds. This new classification provides a more expeditious approach for the assessment of piping requirements and is recommended to the reader. ⌗

References

[1] *Reactor Handbook*, Vol. 3.

[2] *Hazards Summary Report on the Experimental Boiling Water Reactor*, G. N. West, et al. Argonne National Laboratory.

[3] *Metallurgy in Atomic Power*, by Vice Adm. H. G. Rickover. American Society of Naval Engineers Journal, August 1956.

[4] *Fabricated Pressure Piping as Related to Nuclear Applications*, by J. J. Murphy, et al. Proceedings of the Second Nuclear and Science Conference.

Photos courtesy Atomics International, Div. of North American Aviation, Inc.

Winning the Air Conditioning Odor Fight

Round I:

Know Your Nose — Your Nose Knows

Any discussion of odor problems would have to start with the nose. Man has yet to come up with an instrument that is as critical of an unpleasant aroma. The nose has a threshold above which odors can be detected, and it can also determine the threshold concentration. This article explains the common concept of odors, how they can be detected, and their relationship to psychology.

BY ALBERT B. HUBBARD

"EVERYBODY talks about the weather, but nobody seems to do anything about it." That expression has been around a while—even before air conditioning or any odors that might be connected with it had come into existence. Nobody seems to do much about air conditioning odors either. In fact, they go the old saying one better: Nobody even bothers to talk much about them.

Odors and how to control them is a subject that is growing in importance to the air conditioning engineer. It is a phase of air conditioning for comfort that should be better understood. This is the first in a series of seven articles on the odor problem and how it can be solved.

The author is particularly qualified to discuss this subject. He was a long-time member of the American Society of Heating and Air-Conditioning Engineers Technical Advisory Committee on Odors, serving as its chairman during 1956 and 1957. He was associated with General Electric Co.'s air conditioning department for many years and has had considerable experience in the design and installation of air conditioning systems.

Pertinent literature is scarce and the subject is given wide berth at the point of sale. It cannot be said that salesmen and advertising copywriters misrepresent the ability of the air conditioning system to exhale fresh, odorless indoor air. Rather, the customers usually are the culprits, accepting the demonstrable claims of comfort, told in terms of summer resort temperatures and humidities, to include all qualities of mountain-lake air.

We often wax humorous when we discuss odors. But it is never funny to a small business owner, who has invested heavily in summer air conditioning to beat his competition, when he discovers that the system seemingly changes the honest odor of tobacco or cooking food into stale tobacco or "garbage pail."

This article and the others to follow is prompted by a startling conclusion drawn from my odor work. This conclusion is that in every 10 jobs, one of them produces superb air, another is or should be a vigorous odor complaint, and the other eight lie in between, emitting air of mediocre quality as far as odor and staleness are concerned.

A good view of this "odor failure rate" is that competent engineers, contractors, and salesmen can slash it *now* by acting as doctors for ailing conditioning systems presently installed.

Good odor results require attention to a few fundamental principles and to a lot of details. Imagination and ingenuity are invaluable. My purpose is to give these attributes something to work from.

Primer of Odor Technology

The nose senses minute concentrations of certain vapors and gases. Particles can and do cause odor sensations of a sort, but this is not the rule. I have heard many otherwise competent engineers suggest that odors could be removed by dust filters.

The nose's extreme sensitivity should be borne in mind. In concentrations of several parts per million, *weak* odors can be recognized. Some *strong* ones are effective at less than one part per billion. Therefore, an amount of substance so small it cannot be found by any other means may be a strong odor source.

The sense of smell works logarithmically. In psychology the Weber-Fechner Law says that sensation is proportional to the logarithm of the stimulus. In the case of odors, the stimulus is the odorant concentration. Thus, concentration must increase geometrically to cause odor sensation to increase arithmetically.

A "just noticeable difference" in odor is commonly a concentration ratio of about two. That is, the odorant concentration has to double before the observer is aware of any change. Doubling again produces another equal change, and so on. This enables the nose to encompass an enormous range. The practical result is that half a job of odor reduction is no job. An odor adsorber of 50 percent efficiency would produce a just noticeable difference on each pass of odorous air through it.

In common with other senses, the nose has a threshold. Just below threshold concentration the observer is not aware of the odor; just above it he can smell and recognize it. Each odor has a different threshold concentration.

To illustrate the effect of this threshold on air conditioning, suppose a store to be conditioned contains a source of foul odor. Maybe it seeps up from the basement. With doors and windows open the odor remains diluted below the threshold. After air conditioning is installed, the place is sealed, hence the odor is less dilute and now discernible. A customer can truthfully say, "This odor wasn't here before." If, before air conditioning, there is an off-odor each morning when the store is opened, it is a fair presumption that the odor will be an all-day thing after installation.

Psychology in Odors

Psychological effects on the sense of smell must be included in the odor primer. Olfactory fatigue is pretty well known but should not be forgotten. Odor sensation is strongest when first perceived. Then it dies away rapidly although the physical concentration of the odorant remains constant. The time to judge the odor level of an air conditioned space is *immediately* upon entering. This is the exception to the snap-judgment rule.

Beyond fatigue, and more subtle, is olfactory habituation. To illustrate, take the case of a dress shop owner who complains of an off-odor. The odor investigator is struck by the prevailing normal-odor background—the various aromas which new fabrics give off due to dye processes, moth repellents, etc. The owner and his staff are so accustomed to the prevailing odor that they are completely unconscious of it. They are offended by a (perhaps relatively weak) new smell. The investigator and owner may have serious communication difficulties and wrong action may be taken unless the former can sort out the unexpected odor from the acceptable background.

A different form of habituation is better expressed as expected *vs* unexpected odors. We expect certain types of odors in each type of store. We are not offended, indeed seldom notice, such odors unless they are over-poweringly strong. But imagine everyone's dismay if, for example, the odors of the dress shop and delicatessen were interchanged.

Odors are also expected in point of time. For instance, when we get home from work, the smells of cooking food are expected and pleasant. Later in the evening, the remains of these same odors are not popular.

Odor obsession is nearly the opposite of habituation. A store owner gets a severe nasal jolt at morning startup of the air conditioning system, say, and is so distressed he imagines smelling the odor all day. Perhaps because he is sensitive, he is aware of the slightest trace of it. An investigator without this mental stimulus can hardly agree with the owner.

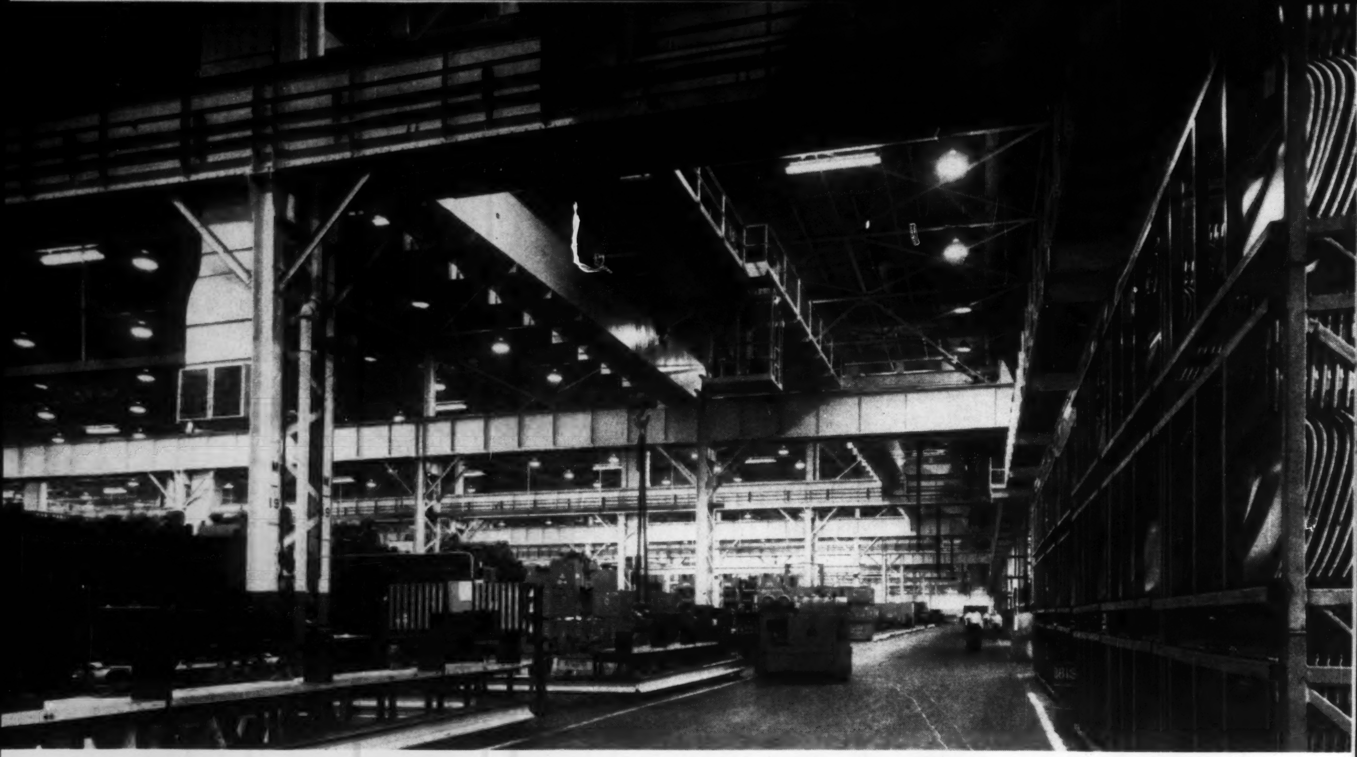
Acceptability of odors is always open to question. No odor is universally acceptable because each of us developed different associations, prejudices, and inhibitions about odors while growing up. Early training also erected certain mental barriers. Each mother, to make her children conform socially, repeatedly warns them: "That's nasty. Don't smell it." The best classification breakdown of odors is: acceptable to nearly everyone, doubtfully acceptable depending on individual experiences, and unacceptable to nearly everyone.

An old solution to the odor problem is to create a new odor, or new blend of odors, and use it to mask undesirable ones. This scheme was widely exploited in antiquity to cover up the body odors of people who could not or would not bathe. The result is that strong personal perfumes still carry the hint of uncleanliness. Perfumes escaping this association are purposely priced high to limit their use to those who presumably keep clean.

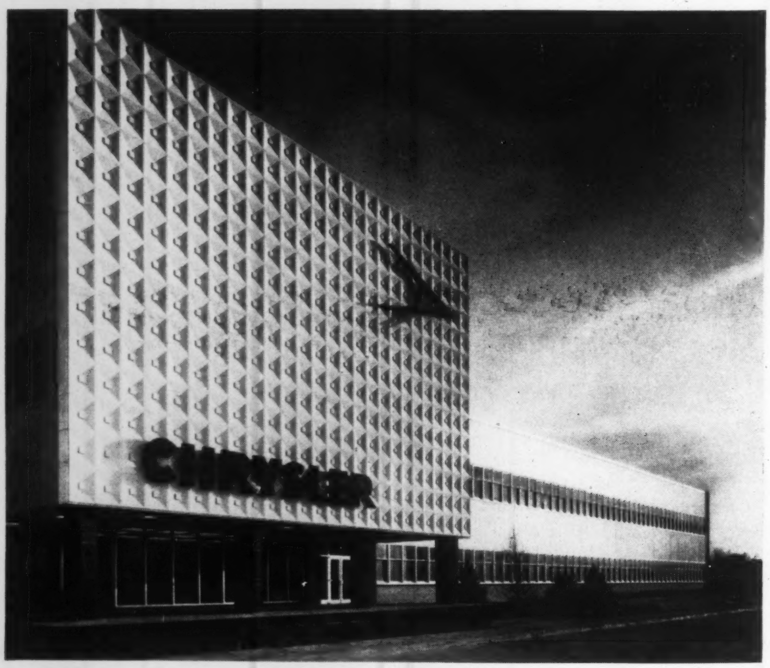
Space deodorants are the modern manifestation of this idea. Unfortunately they are often used in public toilets in lieu of good housekeeping. Revolting associations have been formed so that many cannot tolerate such deodorants in air conditioned spaces.

From this primer, you can realize that odor problems are not simple. To solve them you must use not only the biological facts of smelling, but also some psychological tricks.

The next article, Round II, in this series will discuss odor measurement, or estimating the enemy's strength. ‡



Group Many Central Built-up Systems To Heat, Ventilate New Chrysler Plant



BY N. J. TAYLOR, P. E.
Member
Albert Kahn Associated Architects
and Engineers, Inc.

ONE OF THE most modern industrial plants built last year is Chrysler Corp.'s huge and handsome new stamping facility at Twinsburg, Ohio.

Located on a 200 acre site and covering 1.5 million sq ft, the Twinsburg project consists of a manufacturing building, an administration building, a boiler house, baler house, incinerator building, oil storage

OFFICE BUILDING is air conditioned throughout. Each major area is zone controlled by thermostat which regulates a zone heating coil during both heating, cooling seasons. System has 225 ton capacity

● In a production facility such as this new Chrysler stamping plant, a prime consideration is the provision of adequate makeup air for employee comfort. Large amounts of makeup are required to replace the air exhausted through production processes. During winter, this air is tempered and introduced into work areas at a level about 14 ft above the floor. In summer operation, outside air is admitted via the same duct system to provide the necessary air motion.

By grouping the central built-up systems on the roof, servicing time and maintenance costs are cut.

Mr. Taylor is a graduate of the University of Detroit School of Engineering and is a registered professional engineer in the State of Michigan. With the Albert Kahn organization since 1938, he has been responsible for the design of heating, ventilating, and air conditioning systems in many large buildings and projects.

IN PRESS SHOP, ducts are run in truss space about 35 ft above floor. Supply ducts are dropped along various columns, and air is delivered to immediate areas about 14 ft from floor. Registers feature double deflection for flexibility of adjustment, flow direction

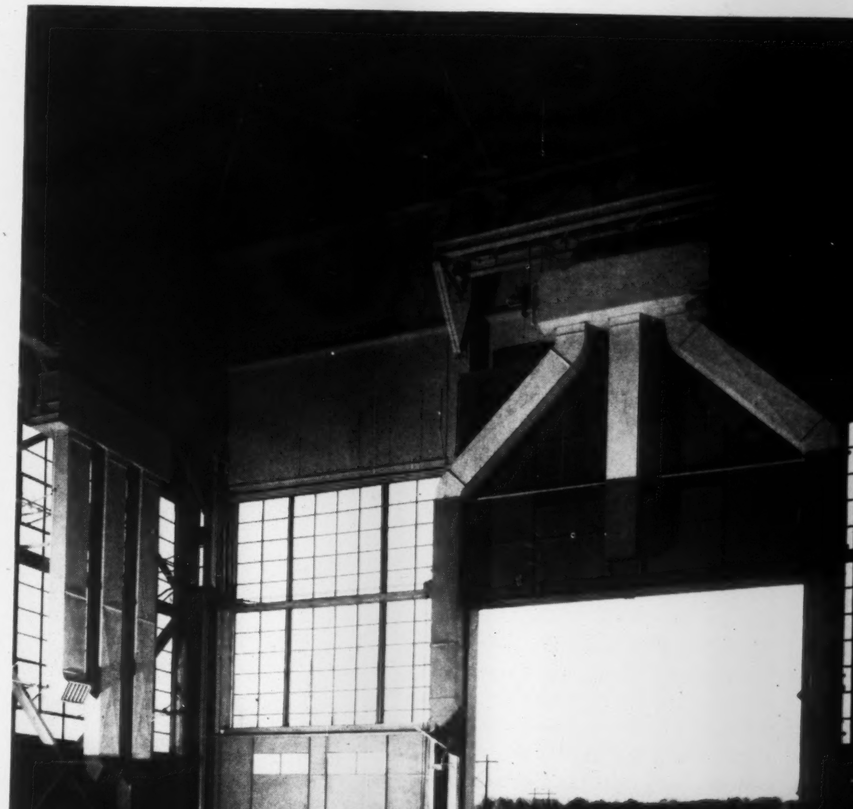
house, and other miscellaneous allied functional units. All the buildings are designed for ease of maintenance and for efficient flow of materials throughout the plant.

To provide internal conditions conducive to efficient operation and good labor relations in a building the size of this stamping plant required unusual attention to the design of the heating and ventilating systems. To insure uninterrupted service for all facilities and to provide for easy accessibility and maintenance, all heating and ventilating facilities are housed in six equipment rooms on the roof, one on the mezzanine floor, two in the basement, and two in the office building.

This type of system, using central units in large equipment rooms, was decided on to make the plant easier and less costly to maintain. By eliminating climbing and walking from unit to unit, servicing costs are reduced.

Another factor considered in the selection of this type of system was flexibility. A system of this type can also be used during the summer.

The main manufacturing building itself covers about 34 acres and houses — in addition to stamping



HEATERS, duct extensions blanket railroad entrance with warm air curtain. All outside wall areas are served by unit heaters in truss area. Units, fed medium pressure steam, heat outside bay only presses — a steel storage area metal assembly area, welding area, and finished product storage and shipping facilities. A unique covered passageway leads from a parking lot for 3000 cars directly to locker room and toilet facilities located on the mezzanine, approximately in the center of the building.

Plant Heated Two Ways

The manufacturing building is heated in two ways. Along the outside walls, approximately one bay wide, unit heaters are located in the truss area with the heat directed downward. These heaters are fed with medium pressure steam and are of capacity sufficient to heat the outside bay only.

The remainder of the building is heated by the same central ventilating systems that provide outdoor and tempered air throughout the building.

Handle 1,920,000 Cfm of Air

Twenty-four central systems are installed in these equipment rooms on the roof. These units handle 1,920,000 cfm of air. Six units serve the press area, which has a height of about 35 ft under the trusses, and 18 units serve the remainder of the manufacturing areas.

Each unit is a built-up system, complete with automatic roll filters having renewable media, nonfreeze heating coils, pneumatic temperature controls, and fan equipment.

Provision has been made to recirculate the air during the heating period. When the air is recirculated, however, enough outdoor air is drawn through the intake louvers to take care of the general human requirements and to make up the air exhausted from the various production processes. Large quantities of tempered outdoor air have to be supplied to a stamping plant to replace the great amount of air exhausted through the process equipment and roof ventilators.

During the summer months all outside air is used. This gives enough air movement to properly ventilate the building and to keep the temperature at a comfortable level.

Exhaust ventilators are installed on the roof throughout the building to remove vitiated air. During the heating season only a few ventilators operate, but in the summer all are in use. In addition, each ventilator is equipped with a fusible link fire damper which may open in case of smoke or fire, even though the fan may not be in operation.

Large Systems Cut Maintenance

The systems are designed to handle large quantities of air in order to keep to a minimum the number of units to be serviced, as no more time is required to service a 50 hp motor than a 5 hp size.

All ducts are run in the truss space. In the press area, where the truss height is approximately 35 ft, supply ducts are dropped along various columns and the air is supplied to the immediate vicinity through registers approximately 14 ft above the floor. The registers selected for the installation have double deflection to provide flexibility for adjustment and direction of air flow.

Provide Basement Exhaust

The basement area, immediately below the presses and housing the drives and motors of the presses, are ventilated by four 100,000 cfm units. There are two fan equipment rooms for these units. Filtered and tempered air is introduced to the basement at one side of this area and blown across the press area to the opposite side.

At this location, vaneaxial fans, hung from the first floor, exhaust the hot air from the basement and cool both the area and the equipment. The basement air is discharged through ducts at columns to a point high above the first floor. From that point, the exhaust fans on the roof expel the hot air to the outside.

Use 225 Tons of Cooling

The office building houses general administrative offices, an IBM room, first aid, kitchen, cafeteria, and dining facilities. It is completely air conditioned with all equipment housed in the fan equipment room on the roof of the third floor. The systems are designed to use all outside air during mild weather. At other times, they deliver a mixture of recirculated and outside air.

Each area is zone controlled by means of a room thermostat which regulates a zone heating coil during both the heating and cooling seasons. A roll type filter with replaceable media is used.

Cooling is accomplished by means of refrigeration compressors totaling 225 tons. A cooling tower, on the factory roof, supplies the necessary condenser water for the compressors. Conventional low velocity distribution systems with ceiling diffusers are used in this area, and suspended ceiling spaces are partially used as return air plenums.

No air intake or exhaust louvers are visible, as they are all concealed behind the extended exterior walls.

Other Systems Separate

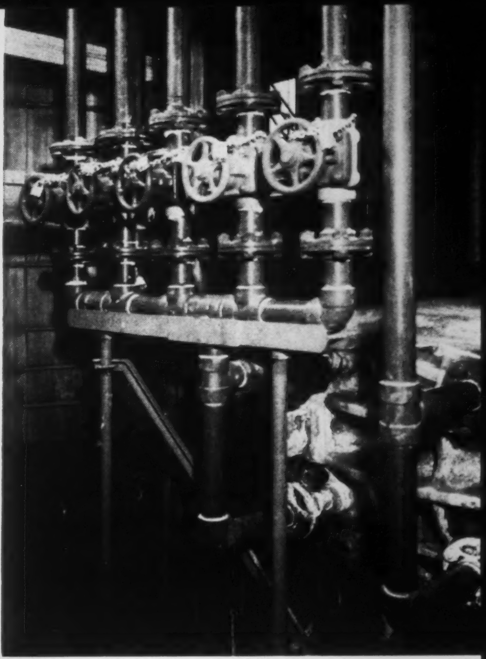
The air conditioning and ventilating systems for the cafeteria and private dining room are separate from the main office system. Each of these areas has its own system complete with its own compressors. The kitchen is equipped with an air makeup system. It is lower in capacity, however, than the exhaust from the area. Thus the kitchen is operated under a negative pressure. The deficient quantity of air required by the hoods and dishwashers is drawn through grilles from the cafeteria which adjoins the kitchen.

Locker rooms have a continuous supply of outdoor, filtered, and heated air when the plant is in operation and also an exhaust system which removes foul air to the outdoors.

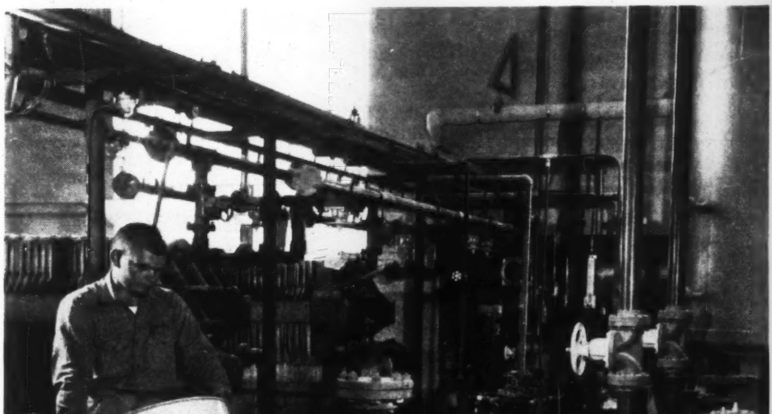
The architect and engineer for the building were F. A. Fairbrother and G. H. Miehls, respectively. Albert Kahn Associated Architects and Engineers were consultants. The mechanical (heating, piping, and air conditioning) contractor was the Robert Carter Co. ⌗

PVC Piping Proves Maintenance-Free In Chemicals Plant

. . . through adequate supporting, correct joining techniques, observance of PVC's working temperature and pressure limits



HEADERS, valve assemblies must be supported independently of rest of piping system due to heavier weight of bonnets, valve handles. Note lateral bracing from floor



SUCTION LINES, in 4 in. diam, extend from storage tanks to diaphragm pumps. Three in. feed line connects pumps to filter presses. Note method of support of cast iron body, glass lined diaphragm valves in foreground

BY CARL H. VOGEL
Engineer
Reheis Co., Inc.

SINCE 1955 the Reheis Co., Inc., Berkeley Heights, N. J., has installed more than 2 miles of polyvinyl chloride piping.

Why PVC instead of some other piping material? Because the manufacture of fine chemicals for pharmaceutical and cosmetic services must be carried out under exacting and precise conditions. No contamination of process material or finished product from equipment or process piping can be tolerated.

Corrosion tests at Reheis showed PVC to be completely resistant to the chemicals which it would transport, thereby eliminating contamination by products of corrosion.

Another reason is that PVC pipelines can be installed in corrosive atmospheres with no fear of external corrosion. Protective coating is unnecessary. No replacement of pipe is anticipated that can be traced to external corrosion.

In areas where environmental corrosion toward carbon steel existed, stainless steel nuts and bolts were substituted where flanged joints were employed. The pipe, fittings, solvent cement, and welding rod are of the same basic corrosion resistant material, thus affording the same overall corrosion resistance. When hot gas welding techniques are used, no failure of weld areas due to corrosion caused by dissimilar materials can occur.

Plastic pipe does not have the rigidity associated with metal pipe. Due to this lack of rigidity, it was found that ½ to 4 in. pipe sizes had to be supported along horizontal runs at 5 ft intervals to eliminate sag.

Even though the lines, pumps, and flow devices were sized and designed for a 5 fps flow velocity, where a 90 deg change in direction occurred (especially from a horizontal to a vertical plane, with pulsating flow) the pipes tended to creep and jump. This trouble was overcome by fastening the pipes near changes of direction with rigid supports.

In several applications, fluid temperatures approach 120 to 150 F. This piping is supported along its entire length by suitably sized angle iron. The angle iron is, in turn, supported by clevis type hangers.

In one line carrying fluid at 135 F, an unsupported horizontal section has sagged several inches, but has not leaked nor broken. Fortunately, the fluid pressure was not great enough to balloon or rupture the plastic. The axiom here is that if working temperatures in the 120 to 150 F range are encountered, the piping must be supported along its entire horizontal run and working pressures limited to a safe range.

Valves Supported Independently

PVC body diaphragm valves are supported independently of the rest of the piping. The weight of the cast iron bonnets and valve handles, in addition to the handling incurred during operation of the valve, would impart strain to the pipeline. Headers and valve assemblies also have support and lateral bracing.

The higher cost of this method of pipe support has been justified because of: (1) the time and labor saved in cutting pipe and solvent cementing joints as compared to the longer time needed for cutting, reaming, threading, and assembly of conventional screwed fittings; and (2) the ease with which bench assemblies can be made and erected in the field. Intricate shapes can be solvent cemented into place without jigs, unions, and temporary clamps.

Flow rates achieved when the system was placed in service were above the designed rate of flow. All piping was designed on the basis of new standard steel pipe and fittings, and pressure drop data obtained therefrom. The smooth walls of extruded pipe and smooth bore design of solvent welded fittings indicate that the expected pressure drop due to friction can be half of that found with conventional threaded fittings.

Must Allow for Expansion

Allowance must be made for expansion when designing PVC systems that are at ambient temperatures above 60 F. This was borne out in our experience by a 150 ft straight run of 2 in. pipe which was not provided with expansion joints nor U-bends. The coefficient of expansion listed by the manufacturer showed a maximum elongation of 1 to 1½ in. for this length. In practice, the length increase was 6 in.

This problem was met by fastening the pipe rigidly in the center of the horizontal run and allowing the increase to be taken up at both ends.

PVC pipe, both rigid and high impact, proved to be flexible enough to take this punishment at 50 psi working pressure. The correct coefficient of linear thermal expansion of 3.7×10^{-5} in. per in. per F deg should be used in design calculations for normal PVC and 5.0×10^{-5} in. per in. per F deg should be used for the high impact resistance material. Expansions greater than ½ in. should be relieved through the use of teflon bellows type or PVC sliding packed sleeve expansion joints.

Vibration of the pipe due to surges in the fluid conveyed was great. This can be attributed to the low (1.34 to 1.40) specific gravity of the piping material. The inside and outside diameters varied somewhat, because of irregularities in the extrusion of the pipe. Four in. suction and 3 in. discharge lines tended to jump, snake, and flex when used on positive displacement pumps with ball valves.

● The support of PVC plastic piping must be given major consideration when the temperature of the conveyed fluid is in the range of 120 F. Angle iron supports have prevented sagging in this plant. Also, it has been found that valves should be supported independently. Provision for expansion of the PVC pipe can be made through the use of bellows type of PVC sliding sleeve expansion joints. Solvent cemented and threaded joints have both been used in the systems. If a snug fit is obtained when the pipe and fitting are joined, solvent cement will seal satisfactorily. When joints were threaded, Schedule 80 pipe was used to provide greater wall thickness at the threaded joints. After three years' operation, these piping systems have shown no corrosion nor physical deterioration.

Mr. Vogel is a graduate engineer from Newark College of Engineering and has his Master of Science degree. He has served Eastman Kodak Co. in the design and upgrading of existing processes and equipment. He accepted his present position in 1952 and has performed a variety of engineering functions concerned with instruments and the manufacture of fine chemicals.

The substitution of lighter balls in place of the initial heavier ones did not alleviate the hammer. The high impact pipe and solvent welded flange fittings withstood severe hydraulic shock at 90 psi for several weeks before corrective measures were taken.

This condition was corrected by installing air or surge chambers (fabricated from 4 in. extruded pipe with PVC cap at one end) vertically in a tee in the suction and discharge lines adjacent to the inlet and outlet valves of the pump. The ease with which piping changes can be made in a plastic pipe system became apparent with this incident. The line was cut with a hacksaw, a flanged joint loosened downstream, joint surfaces solvent wiped, cement applied, tee slipped on and lined up, and flange joint retightened in minutes.

One bad feature of the solvent cement system is the downtime required (48 hr) for curing. A joint will become strong enough in 15 min to allow installation of piping to proceed from that point. However, if an installation must be shut down for changes and be placed on stream in a time shorter than 48 hr, preassembled spool pieces and bench assemblies can be flange-joined to existing pipe systems in the field. An alternate method would be to use conventional threaded PVC pipe and fittings.

Join Pipe Two Ways

Two methods of joining extruded plastic pipe were employed: (1) solvent cement and (2) threaded joints. The first cemented joint fittings available for chemical service were hand fabricated by "belling" the ends of a short length of pipe of the same diameter as the pipe to be joined to an inside diameter large enough to accept the outside diameter of the pipe to be joined. Large uncontrolled clearances, eccentricity of pipe and fittings, coupled with a very fluid, high percentage solvent content of the cement precluded the fabrication of sound joints. This method and fittings were unsatisfactory.

A new type of solvent cement, containing a lower percentage of solvent with dissolved PVC plastic to furnish greater body and higher void filling properties, was tried. It proved successful when used with the new type of molded socket weld fittings. These fittings were tapered at the joint surfaces to afford a positive, tight mating between pipe and fitting.

Quoted delivery time on material was long. In order to meet deadlines, supplies were procured from several extruders. Clearances and tolerances varied with the supplier. When a sloppy fit was cemented, the solvent cement on drying would pull together or shrink in the void between the pipe and fitting. The outcome was a leaking joint.

This was repaired by the hot gas welding technique. A weld bead was run around the pipe, joining the latter to the socket fitting at the neck. This joint was stronger than solvent cementing alone and would effectively stop the leak.

If a snug fit is obtained when the pipe and fitting are twisted home dry, a good joint can be obtained with solvent cement. Each fitting should be slipped onto the pipe dry and tested for closeness or fit of taper before cement is applied and the joint is made up.

Oversized fittings can be set aside and used on pipe that is slightly oversize. Our experience indicated that the optimum diametral gap (difference between inside diameter of fitting and outside diameter of pipe) should be 0.020 to 0.025 in. A good solvent cemented joint may be obtained using an allowable maximum diametral gap of 0.040 in.

Surfaces to be mated were wiped clean with a cloth wet with methyl ethyl ketone before cement was applied. If this cleaning procedure is not followed, an invisible coating on the pipe may prevent the deposit of a continuous film of solvent cement.

Manufacturers of pipe and fittings have now set up standards for proper clearances and tolerances necessary to insure proper fits and subsequent fabrication of strong leakproof joints. Dimensions and tolerances for rigid PVC pipe are published in Commercial Standard CS207-57 and are available from the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C.

The second method of pipe joining—threaded fittings—was employed on ½, ¾, and 1 in. pipe sizes. Schedule 80 pipe was used exclusively. It was felt that the increased wall thickness and smaller inside diameter furnished more strength at the threaded sections.

A long tapered plug was inserted into the pipe end to be threaded to prevent the threading die from crushing or rupturing the pipe wall during the threading operation. A soap solution was used as a thread cutting lubricant. Joints were made up with a paste pipe compound inert toward PVC plastic and the solution carried in the line.

Strap wrenches were used in order to prevent scoring and marring the pipe and fittings. Joints were made up one turn beyond hand tight. Excessive pressure exterted by tapered pipe threads will split the shoulders.

In the threaded joint system a solvent welded flange assembly was used instead of unions which were not available at that time.

No detailed information has been given in this article on the physical characteristics of PVC material. The manufacturers of PVC pipe and fittings have compiled extensive data on corrosion resistance, pressure drop due to flow, physical properties, recommended working pressure-temperature curves, and support spacing requirements. This data is, of course, available from the manufacturers.

After three years of continuous use, the PVC installations have shown no corrosion nor physical breakdown. Outside lines subject to extreme heat, cold, or sunlight have not changed color. Strong acid solutions have not caused the embrittlement nor hardening which may be experienced with some plastic materials. Ease of installation, low initial cost, minimum maintenance, and several years of trouble-free service have proved PVC to be a very useful, economical construction material for chemical process services. ‡

Photos courtesy Alpha Plastics, Inc. and Rebers Co., Inc.

Where Are the Fuels for Heating Needs Going to

. . . Here's HPAC's annual report on the

BY GEORGE W. RUSLER
Chief Staff Engineer
Minneapolis-Honeywell Research Center

IT MUST be realized that we have been using up our fossil fuels at a tremendous rate. Once consumed, they are not replaceable. Also, it must be further realized that the total reserves of these fuels are definitely limited. Accordingly, since our standard of living in the future and in fact our very existence may depend on a continuation of a plentiful supply of cheap energy, it behooves us to take a serious look at the over-all energy resources of this nation and of the rest of the world.

At present, we know of only three primary sources of energy. These are fossil fuels, nuclear energy, and solar energy.

Our immediate concern is with fossil fuels. For the past 100 years they have been our principal source of industrial energy and this will probably be true for some time to come. Our way of life and our transportation systems largely depend on liquid fuels because they are so concentrated, easy to handle, and portable. Because of its importance, therefore, much of the following discussion, analysis, and examples will be with regard to petroleum.

Accordingly, the vital question confronting us is: How long will our petroleum and our other fuels last? Many spokesmen of the industry have for years been optimistic about the life of our petroleum reserves. In 1946, Eugene Holman[1], president of Standard Oil Co., told the American Petroleum Institute that there is no danger of the U. S. running out of liquid fuels "for centuries to come." In 1957, Standard Oil's chief geologist, Lewis G. Weeks[2], said flatly that "we are not running out of fuel."

On the other hand, economists outside the industry and a growing section of the industry itself have maintained that the U. S. is fast running out of oil. On a little longer time scale, the same controversy holds for coal.

Thus, in order to evaluate the true status of our fossil fuel resources, we must attempt to appraise the sizes of our fuel reserves, the rates at which they are being consumed, and our long-term production and consumption trends. More specifically, for U. S. petroleum, we will consider:

- Actual production and consumption figures since 1925
- Net additions to proven reserves resulting from exploration and drilling for several years
- Recognized proven reserves in terms of years of supply since 1940

● We're using up our coal, petroleum, and natural gas resources so fast that a fuel crisis is indicated within the next 20 to 40 years. Petroleum location and production are growing more difficult as these reserves are depleted. The main factor contributing to our probable future petroleum shortage will be the large exponential expansion indicated by our present enormous demand. Oil from oil shales is not the answer, so we must look to other sources for heating beyond the next 40 years.

Mr. Rusler is a registered mechanical engineer in the State of Minnesota and has degrees in mechanical engineering and mathematics from the University of Oklahoma. He has had 17 years' experience in the design, development, and manufacture of oil production equipment. For 15 years he has served in research, project supervision, and staff engineering at Minneapolis-Honeywell on many types of control applications.

This article is based on a paper presented recently before the Honeywell Engineers' Club.

Tomorrow's Come From?

fuel situation

• Two extremes of professional estimates of our remaining geological reserves, namely: 87 billion bbl by Eugene Ayres[3], consultant to Gulf Oil Co., and an optimistic estimate by Dr. Weeks[2] of 185 billion barrels.

From these and other relevant data, it will become clear that the position of the economists should be taken seriously.

Petroleum Production Growing More Difficult

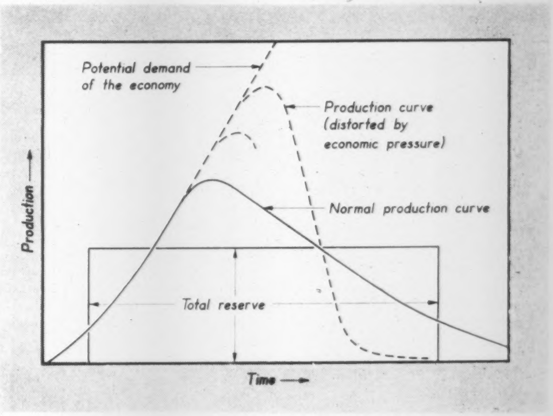
Let's first examine some general facts and trends of the petroleum situation. Until about 1945, oil discovery and production was relatively easy to accomplish. But since then, new oil has become increasingly hard to find. It is deeper, drilling is more difficult, and it is harder to produce. Forbes[4] states that for the 10 year period 1945-1955, the footage drilled, per million barrels of new oil, increased from 35,000 to 75,000 ft and every foot of the latter was far more difficult and costly.

One result of these oil location and production problems is the effects they have had on proven reserves. In 1940 the ratio of proven reserves to current consumption, which amounts to years of proven supply, was 14.1, but by 1956 this had been reduced[5] to 11.3. In 1957, the estimate of proven reserves was drastically reduced to 30.3 billion bbl, or a 10 year supply[6]. Stated differently, the yearly net additions to proven reserves, above production, have been steadily decreasing, particularly since 1951. In fact, in 1957 — for the first time in our history — we found less new oil, by 134 million bbl, than we produced[6]. This fact, coupled with only a 10 year proven supply, indicates a potentially dangerous situation.

Examine Typical Petroleum Production Curve

Before considering some actual production figures, let's examine Fig. 1 so we can gain a basic concept of a typical production curve and some of its implications.

This could be a production curve for a single oil well, an oil field, a geological region, or even for the entire world. The area of the block diagram represents the total recoverable reserve. Obviously, the area under the curve cannot exceed this area. The curve is characterized by a rising production phase, a period of peak production, and a rather long production decline during which the law of diminishing returns operates.

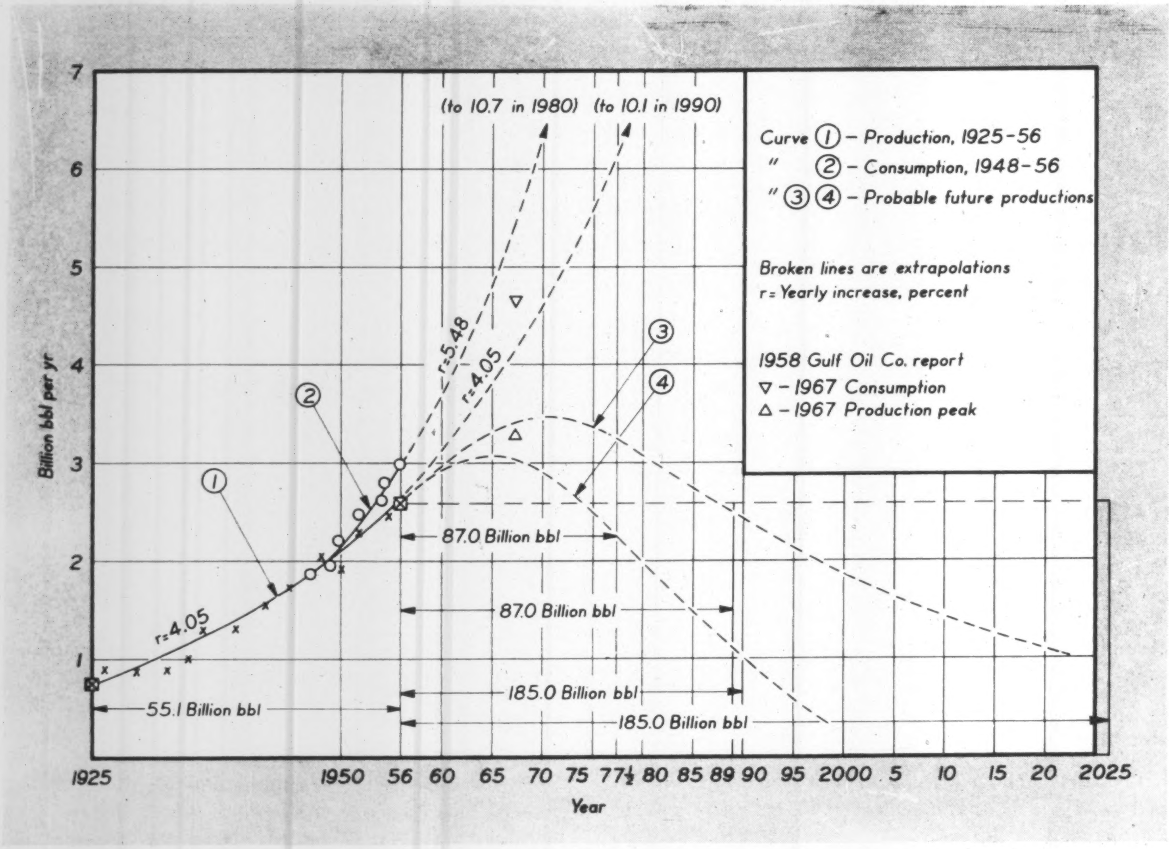

Potential demand of the economy
Production curve (distorted by economic pressure)
Normal production curve
Production
Total reserve
Time

1 TYPICAL PRODUCTION CURVE for petroleum indicates production trend, also total recoverable reserve of any amount of oil. Area under curve can never exceed this area. When economic pressure outruns ability to produce—distorting curve upward (broken lines)—ensuing production decline must be steeper. Results are energy deficit after peak production has been reached, consequent economic crisis

This is a normal production curve for the condition, namely: that economic pressure will permit application of optimum recovery techniques. Now, the potential demand of the economy may outrun its ability to produce, thus causing an energy deficit. In an effort to meet this demand, the production curve may be distorted upward, as per the broken-line curves. However, the ensuing production decline will be correspondingly steeper, since the area under the curve cannot exceed that of the reserve. The degree of this distortion may be limited by the fact that the economy cannot withstand the increased costs of the stepped-up production, whereupon the actual demand will slump off, thus keeping supply and demand in balance. Alternatively, the distortion may be limited by the impending depletion which is controlled by the limitation of areas.

Thus, if no other energy source is available to an economy, then a catastrophic dislocation will occur when the production peak is reached and the resulting energy deficit is realized. The coal situation in England is a good but partial example of this fact. There, the best coal has been used up, production of all remaining grades is more difficult, and there has been no other cheap energy supply available. As a result, England has been in an economic crisis — partly due to an energy shortage. This same thing can happen to any nation — including the U. S. — and when it does, the standard of living will suffer.

An immediate implication of this reasoning lies in the fact that most of our oil fields which were tapped before 1945 are in their declining years of productivity[3].



2 CRUDE PETROLEUM production *vs* consumption in U.S. since 1925 and projected to year 2025 is charted here. Extrapolations of Curves 1 and 2 show probable future demand, while probable production trend is defined by Curves 3 (optimistic) and 4 (conservative) and show oil reserve outlook to be none too bright

Compare Production, Consumption

Now let's consider Fig. 2 which gives a general picture of production and consumption of crude petroleum in the U.S. since 1925. The "x's" and "o's" are actual production and consumption figures, respectively, for the various years. From 1925 to 1947, the "o's" are omitted because production and consumption were essentially equal.

First, we should note from this chart that production and consumption in 1956 were about 2.6 and 3.0 billion bbl, respectively. These are enormous quantities and hard to comprehend. For instance, consider a large oil field of 3000 wells, each producing 100 bbl per day. One year's production of this field would be 109 million bbl, but this would meet the 1956 demand only 13.3 days.

The solid line Curves 1 and 2, which fit the data quite well, were smoothed on the assumption that the yearly increases were a constant percentage of the previous year's production or consumption. They are, therefore, exponential in form and are proportional to $(1 + r)^n$; where r is the yearly rate of increase, expressed decimally, and n is the number of years from the reference year.

Thus, our production and consumption trends appear to be exponential with high rates of about 4 percent and 5½ percent per year, respectively. These are 2.3 and 3.1 times the rate of our population increase.

These explosive trends of Curves 1 and 2 have great significance. With the consumption rate r being about 1.4 percent greater than the production rate, we consumed in 1956 about 345 million bbl more of petroleum products than we produced. This had to be imported. Much greater deficits, and therefore imports, are indicated in the future by the dotted line extrapolations of these curves.

The second and more serious consequence of these trends is the impact which a high exponential production rate r will have on the total reserve. First, consider Mr. Ayres's estimate of 87 billion bbl, which appears to be a reasonable estimate. Assume that this reserve is produced at a constant rate equal to the 1956 production of 2.62 billion bbl per year. As indicated by the block diagram of Fig. 2, this reserve will last only until 1989. But, if it is produced exponentially according to the extrapolation of Curve 1, it will last only until 1977.

If we consider Dr. Weeks's optimistic estimate of 185 billion bbl, and if this is produced at the constant rate of 1956, it will last until the year 2026, as is shown by the block diagram. This repudiates the optimists' claims of reserves lasting for centuries. On the other hand, if this reserve is produced exponentially according to Curve 1, the figure shows that it will last only until 1990.

Thus, with a high exponential production rate r of 4 percent, the second reserve, which is 2.13 times larger than the first, extends the exponential depletion period only 12½ years. Similarly, because of this impact any new reserves, of sizes which are reasonable to expect, will be depleted in a comparatively short time.

These two types of future production, constant and exponential, obviously represent two extremes and thus may not be realistic. Actual production will probably be intermediate between these extremes and would be expected to follow more normal production curves similar to Curves 3 and 4. After balancing the areas under the curves to that of the reserves, actual production peaks are indicated in about 1965 and 1970 for these two geological estimates. Note that these dates precede the exponential depletion dates by several years.

In contrast to the indicated production trends of Curves 3 and 4, our demand, barring a severe setback of our economy, will probably expand exponentially along some curve lying between the extrapolations of Curves 1 and 2. If it follows Curve 2, then, with respect to the optimistic production Curve 3, deficits of some 2.8 and 7.6 billion bbl are indicated for 1970 and 1980, respectively. These deficits are 44 percent and 75 percent of the respective demands on these dates. If, however, the demand follows the more conservative Curve 1, then, with respect to Curve 3, deficits of some 1.1 and 3.8 billion bbl are still indicated for 1970 and 1980, respectively. Here, the deficits are still 24 percent and 57 percent of the demands. The corresponding deficits resulting from comparison of these same demands with Curve 4 will be appreciably greater.

In any case, such large deficits may be difficult to meet—either from imports or from substitute sources such as oil shales, tar sands, or distillation of coal. Production from these sources will require tremendous facilities in the very near future and the costs per barrel will probably be quite high.

An alternate possibility is that our demand will be forceably curtailed to fit our ability to produce. This implies a setback in the economy unless other sources of energy can be developed soon to provide energies in major quantities.

In short, the major factor contributing to our probable future petroleum shortage will be the large exponential expansion indicated for our already enormous demand.

Oil from Oil Shales Is *Not* the Answer

Let's digress here for a moment to consider the impression held by many people that we have no cause to worry about running out of oil because the oil shales out West will supply us for hundreds of years. The Mahogany Ledge, which is our largest high grade shale, yields about 30 gal per ton. After processing a ton of shale, the net yield will probably be nearer to 21 gal or ½ bbl per ton.

Suppose that the oil shale industry could be developed so that it could pick up the above deficits as they materialized. To meet the more conservative 1980 figure of 3.8 billion bbl, the oil shale people would have to process and dispose of some 7.6 billion tons of shale. This would be a fantastic amount of material to handle. By comparison, it is approximately 15.5 times the coal mined or 53 times the iron ore handled per year in the U. S. today.

If exploitation of the more extensive low grade shales yielding 5, 10, or 15 gal per ton is considered, then the situation becomes quite unrealistic.

But suppose these increasing billions of tons *could* be handled. Then the reserve of this formation, which is estimated at 126 billion bbl, could be added to the present oil reserve to make a total reserve of 311 billion bbl. Now, if this reserve were produced exponentially, as proposed before, the depletion period would be extended only from 34 to 44.4 years.

While this oil shale example is overly simplified, it does show that oil shales are obviously not the answer to our energy dilemma. The same general picture holds also for tar sands. The two groups however, may eventually contribute some 5 to 10 percent of our total petroleum demand.

Application of the above method of analysis to various fuels and areas indicates that, in four cases, production peaks will be obtained as follows:

1) U.S. petroleum .... in about 12 years
2) U.S. natural gas .... in about 15 years
3) U.S. coal (present grades) .... in about 20 years
4) World petroleum .... in about 25 years

Where Do We Go From Here?

All of this boils down to two alarming conclusions:

1) The depletion of our liquid fossil fuel reserves is a matter of a few decades—not the hundreds or thousands of years that many people have been led to believe.

2) Consequently, a fuel crisis is imminent in the next two to four decades.

What is the answer? Nuclear energy? Solar energy? Both of these sources are possible ways out of our fuel dilemma. The potential ability of these and other approaches to do this will be discussed in an early issue. ╪

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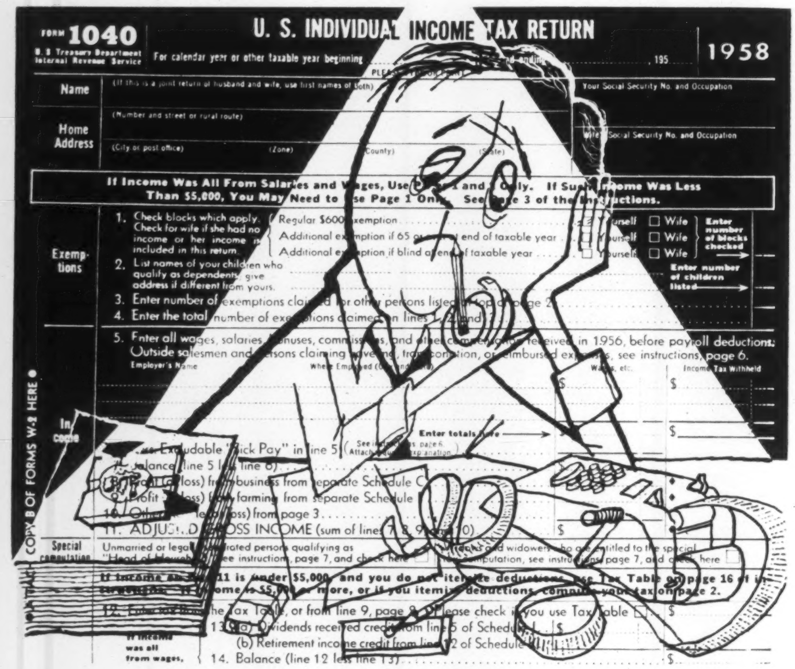
Do You Appreciate Depreciation?


FORM 1040
U. S. INDIVIDUAL INCOME TAX RETURN
1958
Name
Home Address
Exemptions
Income
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If not, you can find yourself in trouble. As a heating, piping, and air conditioning contractor or engineer, this is an important facet to keep in mind. Failure to recognize this friend can cause financial hardship when new equipment must be bought to replace the old, and also at income tax time. Following are some questions and answers relating some of the implications of depreciation.

BY IRVING ELBAUM
Certified Public Accountant

Q: *The word "depreciation" seems to have different meanings to different people in our field. What is the accountant's approach?*

A: The accountant (and the income tax agent) understands depreciation to be a reasonable allowance for wear and tear on equipment and property used in a business. Generally the factor of obsolescence is also included in any estimate for depreciation. This is understandable when one stops to consider that the probable useful life of a piece of equipment can be appreciably shortened by changes in economic conditions, loss of trade, new inventions, prohibitory laws, etc.

Q: *Since no cash outlay is involved in depreciation isn't it in effect just a bookkeeping entry?*

A: True. However, it is an extremely important one. Even though no cash outlay is involved for any given year's depreciation it is vital to realize that unless the records of the business provide for depreciation for each of the years in the estimated life of a cooling tower, for example, the day will come when it will have to be replaced and there may not be enough cash left over from the profits of the business to buy a new one. It is, therefore, important to recognize that, although this item of depreciation in a sense may be considered to be invisible in any one year, it certainly isn't invisible when the cash has to be laid out for replacement.

Q: *How does entry of depreciation help me provide for the purchase of a new cooling tower?*

A: Let's suppose that your business showed a profit of $10,000 for the year, without considering depreciation. You might, therefore, think that you have increased your net worth by that amount of money. Actually, you might have increased your net worth by only $9000, assuming that there was in reality $1000 of depreciation which you had neglected to record on your books. In other words, you would really be fooling yourself. The rude awakening would come later, when the time came to buy a new cooling tower to replace the old one. Without enough cash held back from the profits you would be faced with a problem of obtaining sufficient cash at the time of replacement.

Q: *How do I go about determining the expected life of a piece of equipment?*

A: There are a couple ways of doing this. One, the manufacturer of the equipment can give you his estimate of its longevity. Two, the Internal Revenue Service, by means of its Bulletin F, lists the life expectancy of equipment. For example, the bulletin lists the expected longevity of a pipe bender at approximately 10 years.

Q: *Must I necessarily use the estimates of these two sources?*

A: No. In the final analysis you are the one who will make the decision as to the number of years over which you feel it is fair and reasonable to write off the cost of equipment—less salvage value, of course. Only you know the exact conditions under which the equipment will be working and are, therefore, the final judge.

Q: *You mention the expression "salvage value." What does that mean?*

A: Salvage value means the amount you expect to recover from the sale of the machine at the end of its useful life. Of necessity this has to be a guess. Try to make it an educated guess rather than picking a figure out of the blue.

Q: *What are the basic methods for computing depreciation?*

A: The ways to compute depreciation are: (1) the straight line method, (2) the sum-of-the-years-digits method, and (3) the declining balance method. The straight line method, which is a fairly popular one, is predicated on the assumption that wear and tear are uniform during the useful life of the equipment. Therefore, the cost of the item, less its estimated salvage value, is depreciated in equal amounts over the estimated useful life. Both the sum-of-the-year-digits method and the declining balance method assume that the depreciation is higher in the early years and lower in the later years. The years-digits method works as follows: different fractions are used each year, against the original cost, less salvage value. The numerator of the fraction represents the remaining useful life of the item each year and the denominator, which always remains the same, represents the sum of the digits of all the years corresponding to the estimated longevity. For example, if the piece of equipment has an estimated life of four years the denominator of the fraction would always be 10, since 4, 3, 2, and 1 total 10. For the first year, four-tenths of the cost (less salvage value) would be depreciated, three-tenths in the second year, etc. Under the declining balance method the depreciation base is lowered each year by the amount of the depreciation deduction and a steady rate is applied to the balances that result. Under federal income tax provisions this declining balance rate may be as high as 200 percent of the straight line rate.

Q: *Could you show me a numerical comparison of these methods?*

A: Surely. The tabulation below shows for each of the three methods the annual depreciation charge as well as the accumulated depreciation up to the end of any given year. The basic facts used in the preparation of this table are as follows: it was assumed that a group of equipment cost $10,000 and had a negligible salvage value. It was estimated that the useful life of the items would be four years.

	Straight line		Sum-of-digits		200 percent declining balance	
Year	Annually	Accumulated	Annually	Accumulated	Annually	Accumulated
1	$2500	$2500	$4000	$4000	$5000	$5000
2	2500	5000	3000	7000	2500	7500
3	2500	7500	2000	9000	1250	8750
4	2500	10000	1000	10000	625	9375

You will note that under the straight line and the sum-of-the-digits methods the accumulated depreciation is $10,000 at the end of the fourth year, whereas under the 200 percent declining balance method the accumulated amount is only $9375. The balance of $625 can be handled in one of two ways. Since the income tax law allows a taxpayer to switch from the declining balance method to the straight line method at any time without the consent of the Commissioner of Internal Revenue it would be wise for the taxpayer in this situation to switch from this declining balance method to the straight line method after the end of the third year. Another alternative would be to depreciate the equipment in the amount of $1250 in the fourth year, if the assets were abandoned by the end of that year.

Q: *In addition to serving as documentation in the event of an income tax audit, what other useful purposes are served by depreciation records?*

A: Records of depreciation are invaluable in cases of loss where you are proving to the insurance company what the values of the damaged items were. Also, personal property tax and sales tax audits are greatly facilitated by bringing into play accurate, up-to-date depreciation records. When a business or a given piece of equipment is to be sold it is sometimes vital that the prospective purchaser know the cost, the annual depreciation, the accumulated depreciation, and the salvage value factors. Your records will reflect this.

Q: *Suppose I had a bad year in my business and did not choose to deduct depreciation. Would I be allowed to deduct twice the amount I normally could the next year?*

A: No. The law is so worded that the deduction for depreciation is limited to the amount that was allowed or allowable. Depreciation in your bad year was allowable.

If you chose not to take it that year you are not permitted to recover it later.

Q: *What can I do to guarantee that the depreciation rate I picked up for my equipment will not be upset by the Internal Revenue Service at a later date?*

A: According to the law you can make an agreement with the Commissioner of Internal Revenue establishing the depreciation rate which will apply to either a given piece of equipment or to a group of machines. This works very advantageously in that it helps to prevent future friction between the taxpayer and the Internal Revenue Service.

Q: *Where on my profit and loss statement must I show the expense for depreciation?*

A: There is no one place. Some firms like to show depreciation as part of the regular operating expense. Others like to show it as a separate item after the normal operating profit. The important thing is that it be shown somewhere in the profit and loss statement, since it is one of the vital cost factors.

Q: *I like to figure my break-even point. In order to do this I must know what my overhead is. Is it really important for me to include depreciation as an item of overhead?*

A: Absolutely. Although depreciation is in a sense invisible it is also deceiving. As each page of the calendar is destroyed, the depreciation on a piece of equipment becomes greater. If you allow yourself to be deluded by the fact that it is not important to include depreciation as an item of overhead because no cash outlay is involved you will be fooling yourself to the extent that you will be understating your total overhead. Furthermore, although an immediate cash outlay is not involved with depreciation, money will have to be paid out in the future. Depreciation merely acts as a convenient method for reducing the profit per the books, to such a level that when the day comes (as it ultimately must) that a new piece of equipment must be purchased there will be enough money with which to do so.

Q: *I've been hearing quite a bit about some new income tax benefits in connection with the depreciation deduction. Would you review the salient points?*

A: Surely. The new tax law gives a business the option of using a one-shot benefit which amounts to a flat 20 percent of the cost of the item. The item must be personal property (thus excluding buildings) which is used in a business or for income-producing purposes. The equipment must have an estimated useful life of 6 or more years and have been acquired after December 31, 1957. The items can be new or used. The flat 20 percent is figured on the cost, no provision having to be made for the estimated salvage value. The maximum amount allowable is $10,000 (or $20,000 for married taxpayers filing a joint return) in any one year.

Q: *Does this new depreciation replace the speedy methods (declining-balance, sum-of-digits) we used on last year's tax return?*

A: No. The new flat 20 percent is in addition to any regular or speedy method. However, it is important to recognize that the speedy methods you have been using cover *new* property that has an estimated longevity of 3 or more years and that is either personal or *real* property. Notice how much more limiting the new provisions are.

Q: *Suppose I want to use the 20 percent provision on a pipe threader which I bought November 1, 1958. Must I prorate the 20 percent, since I only had the threader for 2 months in 1958?*

A: No. This 20 percent deduction is allowed even if you had the threader for only 1 day during the year. As a matter of fact the 20 percent can even be deducted if it were sold during the year.

Q: *My business is run through two corporations. Am I entitled to a maximum of $10,000 or $20,000 as the 20 percent deduction in each corporation, since I file a joint return with my wife each year?*

A: Since a corporation cannot file a joint return the limitation is $10,000. Of course, each corporation is entitled to its $10,000 potential maximum.

Q: *I think it would be wise if I could see an actual illustration of these new pointers. Please show me.*

A: Suppose the firm bought some equipment on July 1, 1958 with an expected life of 8 years and costing $4000. If the straight-line method is used (assuming the equipment was used) the firm would be entitled to $1000 as its first year's depreciation deduction. This is calculated as follows:

Flat 20 percent of $4000	$ 800
$3200 ($4000 less the $800) multiplied by $\frac{1}{8}$ (since there is an estimated life of 8 years) multiplied by $\frac{1}{2}$ (since the items were bought on July 1st)	200
Total	$1000

If the declining-balance method is used (assuming the equipment was new) the firm would be entitled to $1200 as its first year's depreciation deduction. This is calculated as follows:

Flat 20 per cent of $4000	$ 800
$3200 ($4000 less the $800) multiplied by $\frac{1}{8}$ multiplied by $\frac{1}{2}$ multiplied by 2 (since this is the 200 percent declining-balance method)	400
Total	$1200

AUTHOR'S NOTE — The following publications are available from the Superintendent of Documents, U.S. Government Printing Office, Washington 25, D.C., which contain more information on this subject:

1) *Tables of Useful Lives of Depreciable Property*, Bulletin F, Internal Revenue Service publication No. 173. 30 cents.

2) *Regulations Relating to Depreciation, Treasury Decision No.* 6182, IRS publication No. 311. 20 cents.

Heating, Ventilating, and Air Conditioning Check Lists for Coordinating Drawings

. . . with architectural, structural, electrical, and plumbing items

BY JOHN W. HABJAN
Project Engineer
Voorhees Walker Smith Smith & Haines
Architects and Engineers

THIS HPAC DATA SHEET contains four suggested drawing check lists which may be used to advantage by heating, ventilating, and air conditioning engineers. The lists contain the majority of most common and essential items which must be cross-checked by engineers who lay out equipment, ductwork, and piping. The main purpose of these lists is to help designers develop uniformly accurate, well coordinated drawings.

The lists can be used by design organizations who are periodically faced with training problems associated with normal turnover. Lists such as these can quickly and clearly impress upon new personnel the scope of their checking responsibilities and the high standard of work which will be required of them. These lists can also be used to emphasize to persons employed indirectly in design the inadvisability of ordering last minute changes in drawings since a relatively small revision on one drawing may affect a half-dozen or more items on other drawings, and sufficient time must be made available to make all related changes.

These lists will help eliminate dimensional discrepancies, drafting omissions, and obscured interferences on drawings which almost invariably lead to job delays and, worst of all, extra costs during the construction phase of a project.

Architectural

Each heating, ventilating, and air conditioning drawing of a project should be closely checked against architectural drawings and the field conditions to assure:

1) *Agreement of arrangements and locations of*:
    a) Columns and their coordinates
    b) Walls and partitions
    c) Windows and doors
    d) Stairs, ladders, and ramps
    e) Tunnels, pits, and areaways
    f) Names of rooms, areas, and of streets on ground floor
    g) Masonry openings (other than heating, ventilating, and air conditioning openings)
    h) Louvers (wall and window type)
    i) Louvers (door and partition type, also undercut doors)
    j) Roof openings and scuttles
    k) Fuel tanks, manholes, vents, and fill boxes
    l) Chimneys, thimbles, and roof sleeves (and their sizes)
    m) Radiators and window air conditioning units (and their riser furrings)
    n) Furring and shafts for ducts and pipe risers
    o) Recesses (and insulation) for convectors, unit heaters, etc.
    p) Radiators, convectors in respect to sill height
    q) Cleanout doors for chimney bases, kitchen ducts, etc.
    r) Holes in floors and walls to suit owners' equipment needs;

2) *Provision of necessary*:
    a) Access doors at duct and pipe shafts, hung ceilings, partitions, etc.
    b) Floor-to-ceiling heights in boiler rooms, equipment rooms, fan rooms
    c) Partition and door arrangements for equipment rooms
    d) Doors, corridors, and knock-out walls (and their sizes) for bringing in and taking out equipment
    e) Trenches and tunnels for pipes and ducts, and pits for equipment
    f) Concrete pads under equipment and curbs for floor penetrations by ducts
    g) Grouting around fire damper sleeves, floors, and walls
    h) Gratings for interiors of shafts, floors, or roof openings
    i) Details of dimensions (roof, floor, wall, and partition openings including outdoor air intakes, exhaust discharges, and combustion air intakes)
    j) Concrete pads and curbs at floor penetrations and at doors to upper story equipment rooms with waterproof membrane floors;

3) *Clearance of*:
    a) Owners' inserts and special markers and equipment
    b) Acoustical panels (symmetrical penetration of ceiling by air outlets)

c) Hung ceilings by piping and top registers
d) Furred walls and partitions
e) Windows, doors, and door swings
f) Owners' equipment holes in floor and walls, traffic aisles
g) Stairs, landings, elevator shafts, and future knock-out walls

4) *Agreement of architectural construction details with heating, ventilating, and air conditioning requirements.*

Structural

Each heating, ventilating, and air conditioning drawing of a project should be closely checked against structural drawings and the field conditions to assure:

1) *Clearance between heating, ventilating, and air conditioning items and structural:*
a) Floor slab, mezzanines, platforms, and canopies
b) Girders, beams, and tie rods
c) Monorail steel
d) Framing for stairs, elevators, and escalators
e) Columns and column pads
f) Footings and piers
g) Struts, braces, and clips
h) Special equipment supports and foundations;

2) *Provision of:*
a) Extra floor framing for heating, ventilating, and air conditioning piping and duct penetrations
b) Extra lintels for heating, ventilating, and air conditioning wall and partition penetrations
c) Upset beams at duct shafts (when required)
d) Fuel tank anchoring slab and strap details, and proper depth of adjacent footing
e) Special reinforcement of building structure to accommodate heavy heating, ventilating, and air conditioning equipment
f) Special support details for cooling towers, compressors, pumps, fans, and suspended equipment
g) Special subway type grating catwalks for boilers, and platforms for auxiliary equipment (when required)
h) Thrust block details for underground high pressure piping
i) All-inclusive typical details of sleeve locations of heating risers, especially along exterior walls (for prevention of obtrusive installation of piping in occupied areas)
j) Special note to general contractor to the effect that all structural items involving heating, ventilating and air conditioning work must first be verified and coordinated with the heating, ventilating, and air conditioning contractor before work on openings, pads, and supports begins
k) Proper reinforcement detail for supporting holes in concrete plank roofs.

Electrical

Each heating, ventilating, and air conditioning drawing of a project should be closely checked against electrical drawings and the field conditions to assure:

1) *Clearance between heating, ventilating, and air conditioning items and electrical:*
a) Lighting fixtures
b) Wall outlets and switches
c) Horizontal conduits and risers
d) Panels (lighting, power, telephone, and signal)
e) Pull boxes
f) Switchboards, load centers, battery racks, chargers;

2) *Agreement of locations of:*
a) Electric motors and motor starters
b) Disconnect switches and emergency switches
c) Remote control pushbutton and panel stations
d) Automatic electric valve and damper motors
e) Solenoid valves and relays (electric, E.P. and P.E.)
f) Electric thermostats and humidistats
g) Pressurestats and control switches (electric, E.P. and P.E.);

3) *Provision of an adequate number of:*
a) Marine lights for fan casings and plenums
b) Lighting fixtures for equipment rooms, control panels, boilers, etc.
c) Wall receptacles in equipment rooms
d) Convenience outlets and lighting fixtures for outdoor installations of cooling towers, etc.
e) Safety signs indicating separately energized electric interlocks
f) Mounting boards and control panels;

4) *Provision of adequate wall and floor space for mounting electrical control equipment.*

Plumbing

Each heating, ventilating, and air conditioning drawing of a project should be closely checked against the plumbing drawings and the field conditions to assure:

1) *Clearance between heating, ventilating and air conditioning items and plumbing:*
a) Plumbing mains and valves
b) Plumbing risers and valves
c) Cleanouts and shock absorbers
d) Roof drains and leaders
e) Floor drains and sump pits
f) Drain system vent pipes and outdoor air intakes
g) Plumbing fixtures, towel dispensers, and waste receptacle units

3) *Provision of gravity or mechanical ventilation for interior toilets, shower rooms, janitor closets, etc.;*

4) *Availability of adequate water pressure at humidifier nozzle;*

5) *Provision of makeup water connections for:*
a) Boilers
b) Expansion tanks
c) Spray systems
d) Electrostatic filter sprinklers
e) Cooling towers
f) Water cooled fan bearings, compressor bearings, etc.;

6) *Provision of properly located drains and hose bib connections for:*
a) Boiler rooms
b) Equipment rooms
c) Cooling towers and evaporative condensers
d) Expansion tanks
e) Electrostatic filters
f) Drain pans
g) Cooling coil condensate
h) Water cooled condensers and aftercoolers
i) Pumps.

Sam Lewis says . . .

"Supply Fan Cannot Be Trusted To Draw Back Recirculating Air"

It's too busy overcoming resistance of ducts, filters, heat transfer apparatuses

THERE hasn't been very much said recently about "neutral zone," except perhaps about the Swedish and Swiss, who, for centuries, have been pretty clever about keeping out of a shooting war.

The neutral zone I am thinking particularly about is the one in a 42-story building for which I designed the heating system a few years ago. I worried about what percentage I must add to the computed size of radiators below the neutral zone and about how much heat input I dared to deduct above the neutral zone. I worried also about *where* in Chicago to find the neutral zone?

Chicago used to have skyscrapers with open elevator shafts and with stairways without any fire doors at the landings. The draft head in any tall chimney largely is influenced by temperature, and any lofty building has gas flowing characteristics like those of a chimney.

I remember a tall office building where, during winter, the gravity roof ventilators above the attic, passed out large volumes of warm air. We installed a 1000 ton air conditioning system but retained the general ventilating system. The following summer, with the cooling plant in operation, I found that the gravity roof ventilators were passing large volumes of air; but the air was flowing the wrong way and was warm, coming down directly from the outdoors and falling back into the building in a manner directly the reverse of the condition in winter.

This neutral zone had climbed up. It became necessary to install exhaust fans in that building, as indeed I have found such exhaust-recirculating fans required in nearly all refrigerated air conditioning systems.

Experience suggests that the supply fan, busy as it must be — overcoming resistance of ducts, filters, and heat transfer apparatuses — cannot be trusted also to draw the permitted proportion of recirculating air back through the exhaust ducts.

I know of an 18-story building in which there are several local refrigerated air conditioning systems, each cooling the rooms of one story. One system on a second story did perform acceptably during the summer; but when November arrived, the chimneylike effect of the stories above the neutral zone compelled shutting down of the second-story air supply system due to leakage into the second-story rooms of cold air from outside. Eventually it became necessary for this plant to replace the hinged dampers, for admission of outside air, with rubber edged sliding blast gates.

The lofty buildings that have open air passages via elevators and stairs from ground to roof are disappearing. They are of the outmoded class that had projecting eaves. One can understand wide roof overhangs in a single-story mud wall, so as to keep rain off the mud, but one has no sympathy for a wide roof projection over the top story of a 20-story masonry and glass facade.

An open balcony on each story of a tall building, whereby one walks outside to reach the fire escape stairs and is thus protected from the fire roaring up the interior shafts, is to be highly appreciated.

I observed this construction first in a hotel in Philadelphia — within sight of Mr. Penn perched on his City Hall dome. ⧧

SAMUEL R. LEWIS, *consulting mechanical engineer and a member of Heating, Piping & Air Conditioning's board of consulting and contributing editors, comments informally each month on practical problems in the field.*

Here's a New, Quick Way To Select Chilled Water Coils

Coil selection need no longer be a tedious, time consuming operation. By following this easy procedure, you can make accurate selections in only a fraction of the time required by other methods.

BY BRUNO P. MORABITO
and
WILLIAM CONROY
Carrier Corp.

• This new two-step graphical method for selecting chilled water coils is based on the fundamental concept of balancing air side and water side performance. A conversion chart makes the method applicable to many situations. An example shows how a typical coil selection can be made.

Mr. Morabito is a graduate of Syracuse University and has been a Carrier systems engineer for 13 years, and at present is in charge of systems applications. He is a member of the Air-Conditioning and Refrigeration Institute committee on cooling towers and is a member of the board of governors of the Central New York chapter of the American Society of Heating and Air-Conditioning Engineers.

Mr. Conroy is an applications engineer in Carrier's machinery and systems division and was graduated in 1955 from Le-Moyne College in Syracuse.

ANY ENGINEER who has selected chilled water coils for a job involving several central station air conditioning units is well aware of the excessive time involved in this single operation. These coils, like those for direct expansion, can now be chosen in considerably less time than was previously possible. Accurate selections can be obtained quickly from two charts and by making one simple calculation.

This new approach also offers the engineer two other advantages:

1) While making a selection he is given a visual check of actual leaving air conditions for the coil.

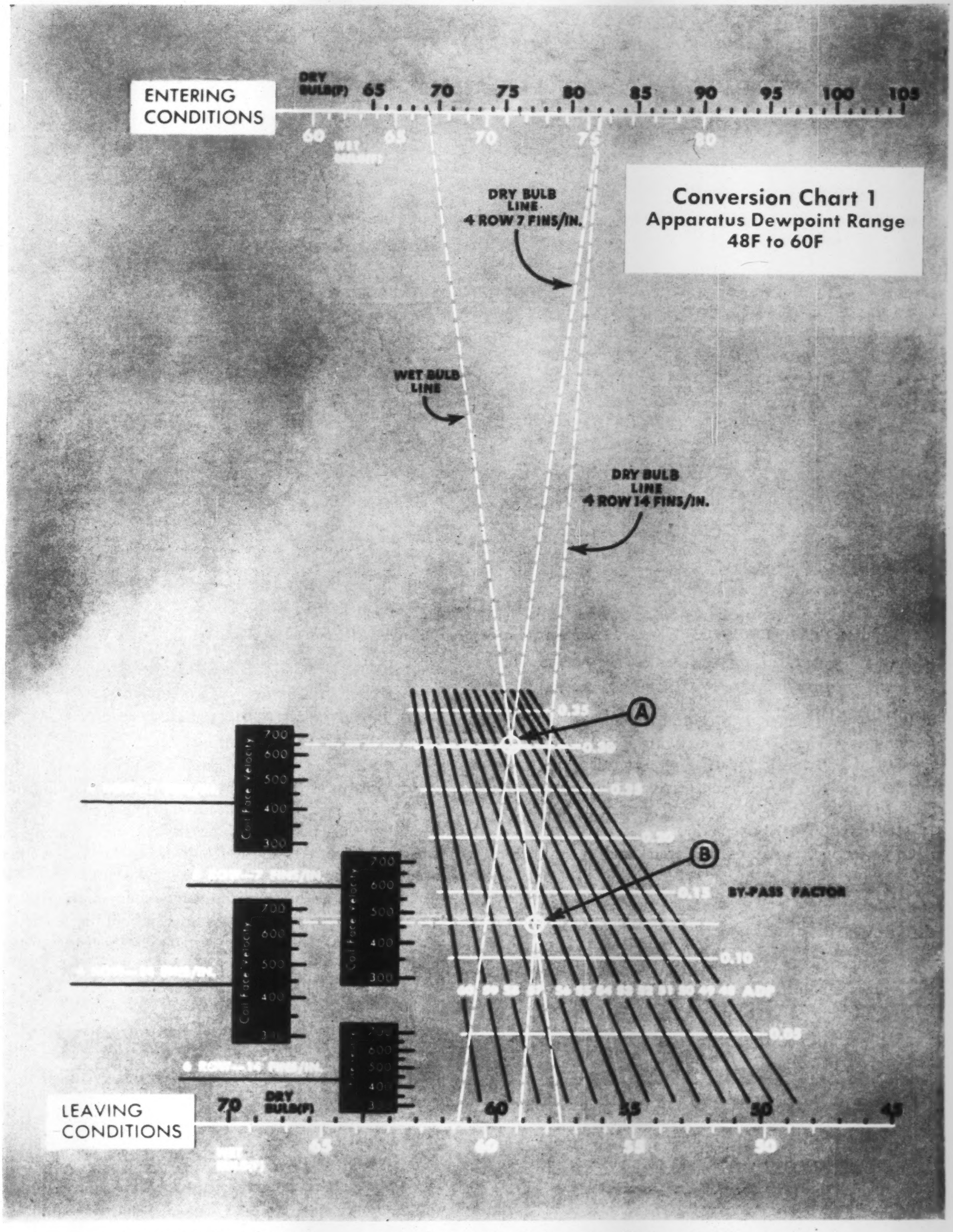
2) He also gains an insight into the relationship between the air side and refrigeration side performance, making possible an economic design with a minimum of effort.

Here's how it works. Using Fig. 1, entering and leaving air conditions are easily converted to a coil selection in terms of number of rows and fins per inch. This is done simply, with the aid of a straight edge. The effective coil surface temperature, or apparatus dewpoint, is determined simultaneously. When the apparatus dewpoint (ADP) is known, the coil circuiting, water flow rate, and pressure drop can be obtained from the two graphical rating charts in Fig. 2.

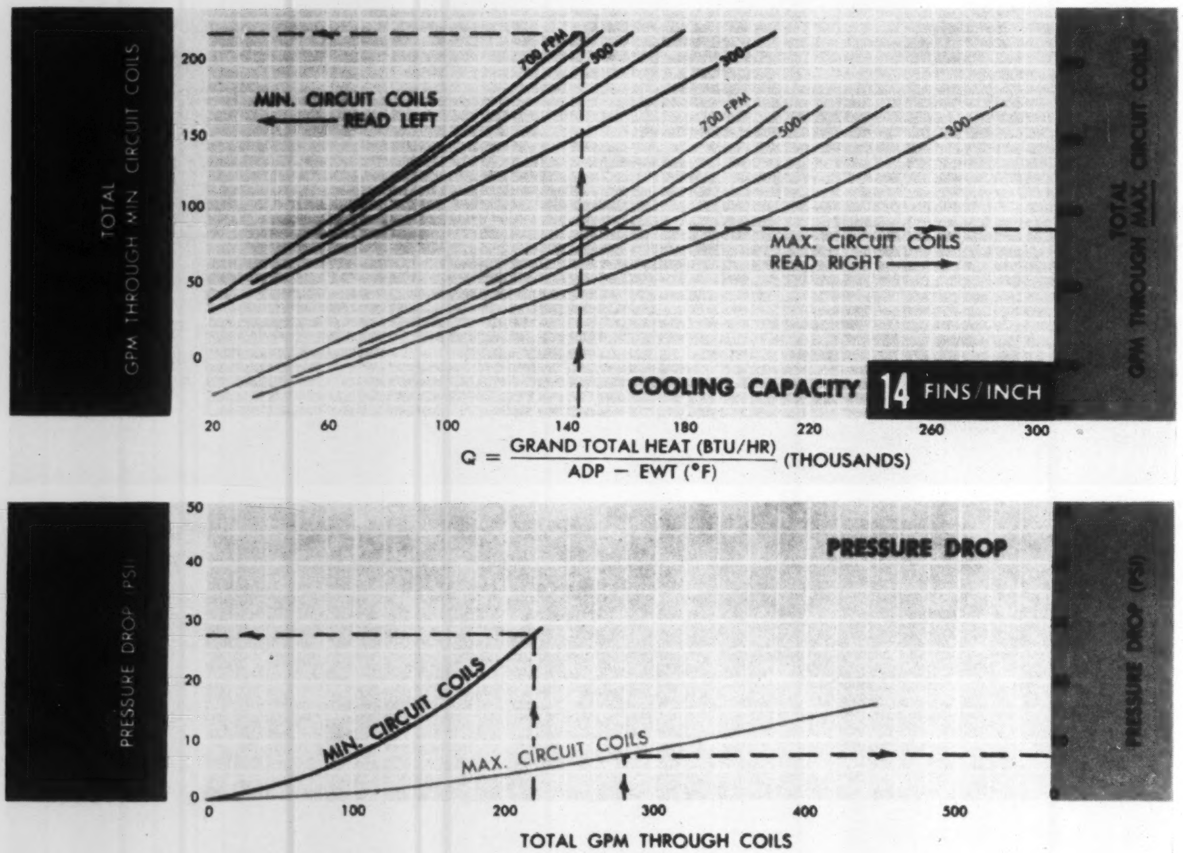
Make Typical Coil Selection

This example illustrates the advantages of the new approach and how rapidly you will be able to make selections after it becomes familiar to you. The example is immediately followed by a more detailed explanation of the procedure. Here's the problem:

Suppose the unit, selected on the basis of air quantity



1 CONVERSION CHART above can be used to select coil, determine effective coil surface temperature



2 COIL CIRCUITING, water flow rate, pressure drop are derived from these two graphical rating charts

in the normal manner, is a central station air conditioning unit supplying 37,800 cfm (with a cooling coil face velocity of 650 fpm). Entering air conditions are 82 F dry bulb and 67 F wet bulb, leaving air conditions are 59.3 F DB and 57.5 F WB, and the grand total heat (GTH) is 1,150,000 Btu per hr.

Coil selection, circuiting, flow rate, and pressure drop are required.

Solution:

1) Using the conversion chart (Fig. 1), the selection is a four-row coil having 14 fins per in. with an ADP of 56 F.

2) Using the chilled water ADP rating, Fig. 2 yields the following information:

Coil circuiting: maximum

Flow rate: 280 gpm (based on 48 F entering water temperature)

Pressure drop: 8 psi

In a more detailed description, this is how these answers were found, step by step:

1) Using Fig. 1:

a) Draw a line from the entering wet bulb scale at 67.0 F to the leaving wet bulb scale at 57.5 F (wet bulb line).

b) Since the four-row, seven fins per in. coil is the least expensive of the coils available with this equipment, try this one first. Draw a horizontal line from the four-row, seven fins per in. scale at the coil face velocity of 650 fpm to intersect the wet bulb line. This intersection is called pivot point *A*.

c) Draw a line from the entering dry bulb of 82 F through the pivot point. This line (dry bulb line for four-row, seven fins per in. coil) intersects the leaving dry bulb scale at 61.5, which is higher than required. Therefore, repeat the procedure for a four-row, 11 fins per in. coil. The leaving dry bulb with this coil is 59.1 F, which meets the requirements. This coil is therefore the correct selection with respect to air side performance. The apparatus dewpoint (ADP) at pivot point *B* is 56.0 F.

2) On Fig. 2:

a) To use the chilled water ADP rating for this coil, first calculate *Q*.

Q = [GTH (in thousands)]/[ADP − EWT]

The engineer will be guided in his choice of entering water temperature (EWT) by the common practice of having a difference of 7 to 9 F deg between the apparatus dewpoint and entering water temperatures. Using 48 F water, then

$Q = 1150/(56 - 48) = 144$

Entering the capacity rating at $Q = 144$ and interpolating for a coil face velocity of 650 fpm, then

Flow rate (maximum circuited coil): 280 gpm
Flow rate (minimum circuited coil): 220 gpm

b) The pressure drop for these water quantities is read directly from the curves.

Pressure drop (maximum circuited coil): 8 psi
Pressure drop (minimum circuited coil): 28 psi

On the basis of pressure drop the maximum circuited coil is the logical choice.

To select a coil for a definite water temperature rise the above procedure is reversed. First, calculate the corresponding gpm and use the pressure drop rating to determine coil circuiting. Then enter the capacity rating at the known gpm and read Q. This Q is then used to calculate the required entering water temperature.

The preceding example demonstrates the simplicity and speed of this new approach. The entire selection involves nothing more than drawing a few lines on the conversion chart, making one simple arithmetic calculation and reading water quantity and pressure drop from the appropriate rating curves.

Checks Leaving Conditions, Aids System Design

To exactly match a given set of entering and leaving air conditions requires a very definite configuration of outside coil surface (number of rows and fins per in.). The limited choice of rows and fin spacings actually available means that, generally, a good coil selection is one closely approximating the desired leaving conditions. Step 1 of the example shows how actual leaving conditions for a coil are found during the selection process. This means that the engineer has a check on the conditions which determine the ratio of sensible to latent heat transfer.

The effective coil surface temperature (ADP) that is established when evaluating the air side performance of a coil is the key to the selection, since it can be considered to be the balance point between the air side and refrigerant side performance of the coil. It enables the engineer to make a logical rather than arbitrary choice of water temperature. Also, it will frequently be a guide in evaluating overall system design.

Consider, for example, the process of equipment selection for a system that requires several central station units. Here, the engineer first establishes the loads and air quantities based on room design conditions. Thus, he resolves the entering and leaving conditions to be used in the selection of the units.

In order to meet the desired leaving conditions with the established air quantity and entering conditions, a specific coil surface is required for each unit. Using the new method, the proper coils can be selected and the apparatus dewpoints determined *without consideration of the final refrigeration machine selection.*

The next logical step is to determine the optimum chilled water temperature for the system. As in the example near the start of this article, the criterion of a 7 to 9 F deg difference between the lowest ADP and the chilled water temperature may be used. Remember, however, that the less this difference, the greater the water quantity required. Determining the water quantity and temperature in this manner will allow for easy balancing with the refrigeration machine selection.

Where coils are selected on the basis of a fixed water temperature rise, the entering water temperature required for each unit can be found directly, using the ratings as previously explained. The lowest water temperature can then be used in the selection of the cooling equipment.

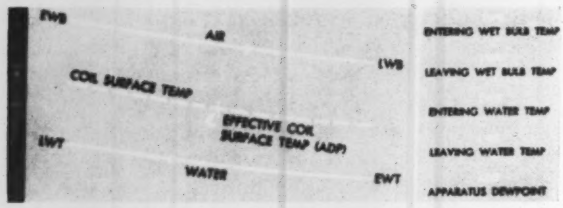
In either case, the refrigeration machine selection will almost invariably prove more economical than when based on an arbitrary choice of chilled water temperature, which is often lower than required.

To demonstrate the advantages with respect to overall system design, consider the example of a department store where 15 units serving the general store area have ADP's grouped close to 56 F. The 16th unit which serves the store cafeteria has an ADP of 50 F. If the water temperature is selected on the basis of this latter ADP, the entire system will be penalized because of this one unit. Rather than do this, it is often possible to accept a compromise in relative humidity (for example, raising it from 50 percent to 55 percent) in the area calling for the low ADP. If a compromise is not acceptable, it may be possible to treat the special area as a separate system. Thus, better economy can often be incorporated in the system in both first and operating costs.

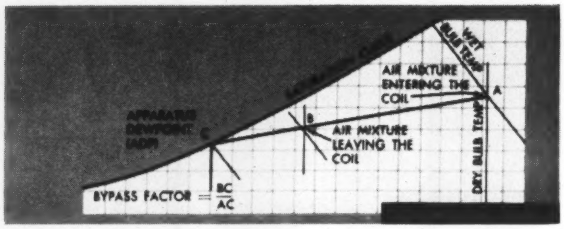
Engineering Principles Behind New Technique

The preceding discussion illustrates the mechanics of this new method and the benefits that are to be derived from it. Although no other information is necessary to use the method to full advantage, the engineer is undoubtedly interested in the principles behind this simplified technique.

Regardless of the form in which ratings for cooling coils are presented, the basic considerations behind these ratings are identical. They can be resolved into a simple two-step concept — matching air and water side performance. Each is relatively independent of the other. The air side involves a sensible and latent heat transfer



3 SURFACE TEMPERATURE for cooling air with water (counter flow) shown here



4 PSYCHROMETRIC CHART illustrates simultaneous cooling, dehumidification of air

between the coil surface and the air, represented by the difference between entering and leaving air conditions. The chilled water side involves the same quantitative heat transfer between the coil surface and chilled water.

Significantly, the balance point between these two performances is the effective coil surface temperature, or apparatus dewpoint (Fig. 3).

Consider air side performance. Air leaving a coil is a mixture of air particles which have been reduced in temperature and moisture content through direct contact with the coil surface and subsequently with each other (Fig. 4). Long ago, a rational method was devised for resolving this highly complex physical phenomenon into a simplified scheme for rating coils. The simplification results from considering the air leaving the coil as a mixture of air which has passed through the coil completely unaltered (bypass air) and saturated air at the effective coil surface temperature. This method is consistent with the description of air side coil performance as given in the current edition of the American Society of Refrigerating Engineers Data Book.

Definitions of the two important terms involved in the concept are:

1) *Bypass factor* can be considered to be the fraction of the leaving air which has passed through the coil completely unaltered, and may be represented by the following equation:

Bypass factor = bypass air/total air through the coil

This ratio varies with the coil face velocity and the amount and type of external coil surface (rows depth and fin spacing) and is therefore related to the air side performance of the coil. This is the same as the term e^{-c} used in the ASRE-ASHAE Coil Rating Code[1], although it is not explicitly called bypass factor.

2) *Apparatus dewpoint* (or effective coil surface temperature) is dependent on the bypass factor and can be considered as the uniform coil surface temperature which would produce the same leaving air conditions as the non-uniform coil surface temperature that actually occurs.

Leads to Two-Step Coil Selection

The two concepts of bypass factor and effective coil surface temperature (ADP) lead naturally to a two-step procedure for coil selection based on the fundamental idea of balancing air side performance with water side performance.

Evaluation of the air side performance consists of selecting the coil surface and the effective coil surface temperature needed to produce desired leaving conditions.

The conversion chart used for this purpose is simply an alignment chart. It provides a graphical solution of the mathematics involved in the air side performance of the coil. The representation[2] of the simultaneous cooling and dehumidification of air by the line *AC* in Fig. 4 leads to the following two equations:

Bypass factor = (leaving dry bulb — apparatus dewpoint)/(entering dry bulb — apparatus dewpoint)

Bypass factor = (enthalpy at leaving wet bulb — enthalpy at apparatus dewpoint)/(enthalpy at entering wet bulb — enthalpy at apparatus dewpoint)

The conversion chart provides a simultaneous solution of these two equations over the range of apparatus dewpoint indicated.

The coils represented on the chart are for a particular line of central station air conditioning units. Although the coil bypass factor is not used directly in the selection procedure, bypass factors (represented by horizontal lines) have been included in the conversion chart to show the relation between bypass factor and coil selection. These bypass factor lines also make it possible to use the chart for the selection of coils other than those shown.

Evaluation of the water side performance consists of using the effective coil surface temperature to determine coil circuiting, water quantity, and pressure drop.

The chilled water coil ADP ratings are used for this purpose. These ratings are based on established principles of heat transfer and are presented in a form providing for their easy use.

Same Approach for Direct Expansion Coils

Although the above discussion has been confined to chilled water coils, the air side evaluation applies equally well to direct expansion coils and a simple tabular rating has been devised to evaluate the refrigerant side performance of these coils. This rating gives the refrigerant temperature for a particular coil when the grand total heat and apparatus dewpoint are known. ‡

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[1] ASRE-ASHAE Joint Standard *Methods of Testing and Rating Forced-Circulation Air-Cooling and Air-Heating Coils* as adopted by ARI.

[2] This approach is valid, although the actual conditions of the air as it passes through the coil do not necessarily fall on a straight line. For a detailed discussion, see *Psychrometric Factors in the Air Conditioning Estimate*, by C. M. Ashley, ASHVE Journal Section, Heating, Piping & Air Conditioning, March 1949.

Air Pollution, Its Causes and Cures

... will have to be learned if we are to keep on breathing relatively clean air

BY GEORGE S. REICHENBACH, JR.
Industrial Hygiene Engineer
Bethlehem Steel Co.

THE National Conference on Air Pollution, held recently in Washington, brought forth the following facts:

- There is very limited knowledge of the identity and concentration of pollutants in the air.
- Much engineering information is available for the design of systems for stack gas cleaning. But, intensive application of this knowledge and large investments by industries have not solved the resulting smog problem.
- It can be anticipated that a growing list of chronic diseases will be associated with air pollution.
- Various legislation pertaining to air pollution will be enacted in areas where the problem is sufficiently publicized.

The conference was called by Leroy E. Burney, Surgeon General of the U. S. Public Health Service, to focus more attention on all phases of air pollution. About 850 representatives from government, industry, education, and labor attended.

Urges "Crash" Training Program

Herman E. Hilleboe, New York State Health Commissioner, suggested that the Public Health Service institute a "crash" program to recruit, train, and enforce air pollution in the individual states. He urged this concentrated action because of the lack of skilled personnel that can effectively combat air pollution. He also stressed the importance of arousing public interest and awareness of the need for action in controlling it.

Along these same lines, Senator Thomas Kuchel, California, stated that in the next session of Congress he was prepared to implement, extend, and carry forward the Air Pollution Research and Technical Assistance Act, Public Law 159 of the 84th Congress, which he had sponsored.

In a symposium discussing what has been done to enforce air pollution control, Mayor Raymond Tucker of St. Louis credited the excellent work of the smoke control agencies and stated that "the battle against city smoke palls has been won in St. Louis."

Determining the kind and extent of air pollution was discussed by A. J. Haagen-Smit, California Institute of Technology, and others in a panel session. It was pointed out that present techniques for this are of limited accuracy both qualitatively and quantitatively.

The sources of air pollution range from domestic to municipal, through the various industries, and on to other sources such as transportation. Domestic problems such as trash burning are usually defined without too much difficulty. Municipal problems such as smokes of the eastern cities and smogs of the western cities are more difficult to identify. Herbert C. McKee, Southwest Research Institute, put it this way: "The atmosphere gets into such a mess at times that frequently it is impossible to distinguish one pollutant from another."

Pollution "Baseline" Must Be Set

Control methods and procedures approaching the problem from an engineering viewpoint were discussed by Charles E. Lapple, Stanford Research Institute, and Andrew J. Rose, Jr., U. S. Public Health Service air pollution engineering research staff. They pointed out that the atmosphere was a receptor for dispersal of wastes and that individual areas should be studied to determine the capabilities of dispersal.

Mr. Rose said, "A baseline, above which pollution concentration is not tolerable under any condition, should be established. Such a limit must consider two factors: the degree of control for any source independent of other sources of pollution within the community must be such as to prevent obvious damage to property, including corrosion and soiling, obvious damage to vegetation, obvious injury to animals, and obvious detriment to health; also, the limit of control thus established for each industry, for the air pollution potential in the entire area, must be such that it would prevent serious damage to property and vegetation, serious injury to animals, and no detrimental effect on health under the most adverse weather conditions possible within the area. Such maximum limits of tolerance must be continually revised, based on new knowledge or significant changes in the area affected."

Dr. Lapple, Mr. Rose, and other speakers all pointed out that, depending on the topography, micro-meterorology, population, and industrial density, there would be areas where strict stack gas cleaning would be essential and others where limited or no cleaning was needed. These are all engineering decisions and many of the parameters are well known. ‡

the law and your profits

Change Orders, Incomplete Records Cost Contractor Half His Claim

BY WILLIAM HURD HILLYER

IT WOULD SEEM that the confusion caused by change orders sometimes tends to bring about loose bookkeeping practice. This was what caused the heating contractor in the following case to lose money, as well as valuable time before three courts.

X. L. Heatta, doing business as Heatta Installation Co., was awarded a contract on June 28 for a heating system in a school building, the work to be completed by October 1. This contract with the school district provided, among other things, that any disagreement arising therefrom should be submitted to arbitration.

Judgment upon the award rendered might be entered in a court of proper jurisdiction. It was mutually agreed that the arbitrators' decision would be "a condition precedent to any right of legal action that either party" might have against the other.

Differences arose between Heatta and the school district trustees, who refused to arbitrate. Eventually Heatta sued the school district for $7119 plus interest as balance due on the contract. Answer having been filed, counsel for the respective parties stipulated in writing that the case be "dismissed without prejudice," it being understood that "matters therein involved" be submitted to arbitration.

The case was accordingly dismissed. Two years after the original completion deadline, arbitrators were appointed.

On November 17, they made a report. This was supplemented by a written communication reciting that two items totaling about $4000 were "indisputably owing to plaintiff."

The report concluded that the school district owed Heatta $3551 balance due—a sum less than half the amount demanded by him. The following February, he brought action to enforce the arbitrators' report as modified by the letter relating to the two undisputed items.

In their answer, the school trustees admitted that Heatta performed work and furnished materials for the school. They also admitted the dismissal of his original case upon stipulation that it be submitted to arbitrators, whose appointment was likewise admitted.

However, the trustees alleged that the arbitration was "arbitrarily and illegally held before arbitrators not qualified by law." It was further alleged that the arbitrators were "guilty of misconduct and committed gross error in hearing and refusing to hear pertinent evidence." The arbitrators acted improperly in other ways, the trustees averred, and in such a manner that right of defendants were prejudiced and the entire arbitration thereby rendered null and void.

The trial court heard the case without a jury and gave Heatta a judgment for the reduced amount of his claim, together with interest as found by the board of arbitrators.

From this judgment the school district appealed to the state supreme court. That tribunal, affirming the lower court's decision in favor of Heatta, found "no competent evidence of fraud nor misconduct" on the arbitrators' part. "A reading of their award," the higher court declared, "shows that they carefully considered each point in dispute."

Examination of the award-summary disclosed no prejudice on the arbitrators' part. For, said the court, at least half the disputed points were decided in favor of the school district and against Heatta. It was pointed out that "most of these disputes arose from the fact that there were certain change orders made by the trustees, thus departing from the original plans and specifications." The supreme court further found that the arbitrators were "all able and skilled."

The judgment of the trial court for $3551, plus interest, in favor of Heatta was sustained.

This sum, as we have noted, was less than half of Heatta's original bill for balance due. Although he was out something over $3000, he was unable to substantiate his claim for this deficit before so strict and technical a board of arbitrators.

Why was this? Plainly enough, as implied by the court itself, the true culprits were the many "change orders" accepted by Heatta during the progress of the work. Doubtless he did not anticipate that these changes would have so costly an outcome, and hence he failed to keep strict records, well verified on the spot. ‡

WILLIAM HURD HILLYER, *author of this regular feature, is a contributor to a number of banking and financial publications and has written several books on business. He has an extensive practical legal and financial background.*

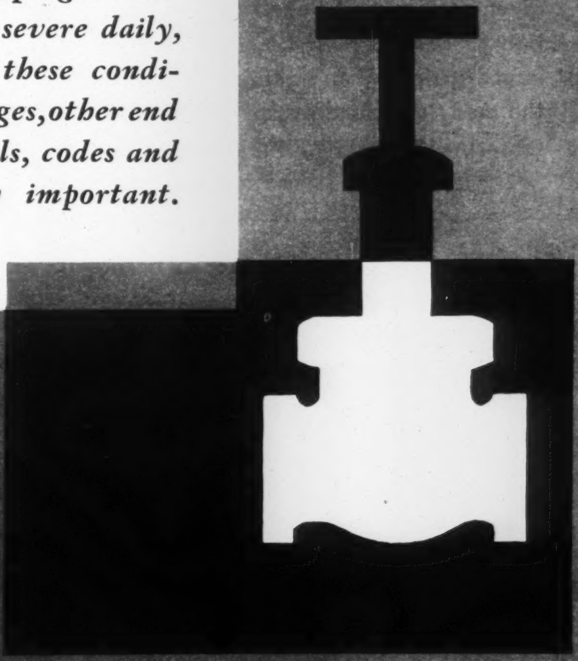
This series presents actual cases. All names are, however, fictitious. It should, of course, be remembered that laws vary in different states.

HPAC ENGINEERING DATA FILE

What to Consider When Selecting Valves

With process and power piping service conditions growing more severe daily, careful consideration of these conditions, bolting, gaskets, flanges, other end connections, body materials, codes and standards is increasingly important.

By Carl A. Dopp



There are certain general considerations in selecting valves which are common to all types. Such service factors as temperature, pressure, fluid handled, pressure drop, and frequency of operation all affect the problem. The importance of each of these and of other factors are discussed. The type of end connection must be considered. The various flange facings and the proper application of these facings in accordance with standards are summarized in easy to use tables. Helpful information for selection of bolts and bolting materials for flanged end connections is given. For a given service and flange facing the selection of gaskets must be properly made to insure maintaining tight joints. Several of the many standard gasket designs are presented, with notes on their application.

Strength and corrosion resistance are two major properties to consider when selecting the valve body material. The applications and limitations of valves of various materials are presented.

The author — who is a member of HPAC's Board of consulting and contributing editors — has assembled this information from many sources, starting with his own wealth of experience based on 40 years with Crane Co., where he was directing engineer in charge of the valve and fittings department from 1935 to 1953 when he retired. Consulting engineers who are designing, and contractors who are installing piping systems every day were interviewed. Their opinions and desires weighed heavily in the preparation of this material.

What to Consider When Selecting Valves

WITH PIPING service conditions growing more and more severe by the day, so have the number of types and designs of valves to control these systems multiplied. Choosing the right valve to perform a particular job is no easy task. It is one in which extreme care, caution, and judgment must be exercised.

Therefore, the selection of the proper valves for a piping system is a *major* consideration in the overall design. What are the factors to be considered? Obviously, these include type, size, connections, room for installation and servicing, and location for convenience of operation and maintenance.

Many Factors Are Involved

But there are other factors to be considered, too. These are:

1) For what *service* will the valve be used? What *fluid* will it convey?

2) What will the *maximum pressure* be?

3) If subject to *vacuum,* what will be the highest vacuum? When the highest degree of continuous vacuum is required as in the evacuation of electron tubes, or in extremely critical chemical processes, the valve limitations should be stated by the manufacturer. For special vacuum applications the use of a "helium-mass-spectrometer" will usually detect the most minute leaks. This is a very expensive process and valves for such service are generally made specifically for this. For such applications, the specification should state the permissible rate of leakage in units of micron cubic feet per hour. A leak of one micron cubic foot per hour is a leak at a rate which will cause a rise in pressure of one micron in a one cubic foot vessel in one hour.

4) How tight should the valve be? Should it have been "air tested" for tightness, or is the hydrostatic test sufficient? If the valve has been air tested, it is generally stated in the manufacturers' literature. There are applications where a hydrostatic test is not sufficient, such as for gasoline or vacuum service. In such cases if the literature does not indicate "air test," the specification should so state.

5) If the valve is to be used for *high temperature* what will the highest temperature be? The maximum allowable temperature a valve should be subjected to can usually be obtained by referring to the information provided by the manufacturer.

6) If the valve is to be subjected to *sub-zero temperatures,* what will the lowest temperature be? Valves used for temperatures below zero are usually specially made. The conditions should be stated clearly in the specifications.

7) What about *pressure drop?* Is low pressure drop of vital importance? Pressure drop is the loss of pressure due to line friction, exaggerated by changes of direction, and distorted passages such as in a globe valve. There can be no flow in a line without pressure drop. In other words, the downstream pressure must be lower than that up-

stream. Minimum pressure drop is extremely important in many lines — high pressure steam, oil, boiler feed, long distance pipe lines. The pressure drop should be considered as a factor in the selection of the right valve.

8) What about the *size* of the valve? This is not necessarily the same as the size of the line. For example, a stop check valve, pressure regulator, drain valve, safety, or relief valve must be selected on the basis of the service requirements or the capacity of the valve, not the size of the pipe connected to it.

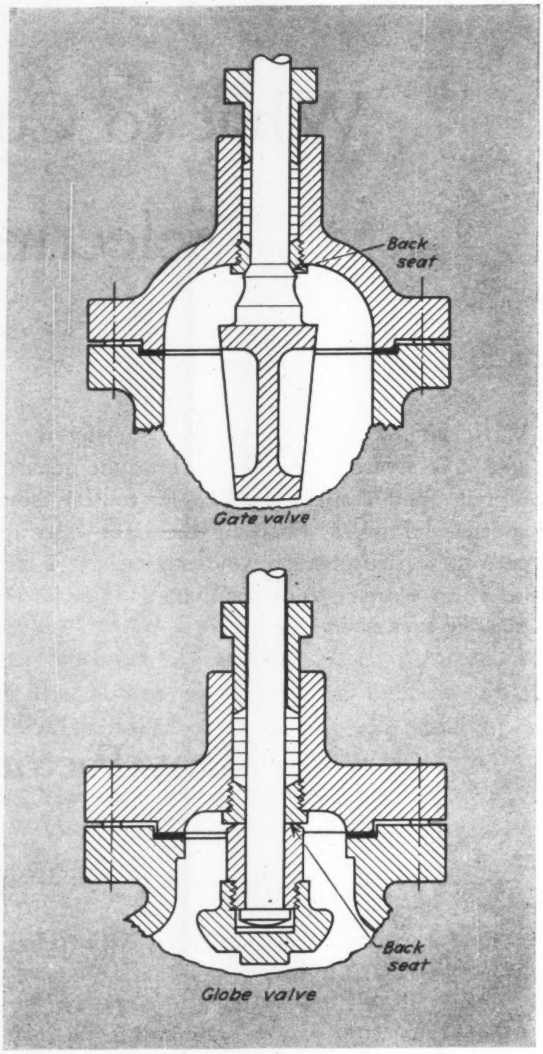
9) How is the *end connection selected?* The type of end connection is generally the same as that used in the rest of the line.

10) What type of valve should be used where *throttling* is to be encountered? A globe type valve should be used rather than a gate valve if the fluid is to be throttled.

11) Will the valve be subject to *frequent operation?* If so, a globe valve will last much longer than a gate valve. The globe valve requires fewer turns to open and has much less lift than a gate valve. Sliding stem globe valves are often used for such service where frequent and repeated operation is necessary.

12) What types of valves should be considered for *corrosive service?* If internal or external corrosion is likely to be serious, valves of special design or material should be considered.

13) How should *back seating* be taken into account? Most regular gate and globe type valves are designed to provide back seating. This consists of seating surfaces on the lower part of the stem or on top of the disc and in the valve bonnet. The purpose is to provide means for preventing leakage around the stem when the valve is wide open. The details of this type of valve construction are shown in Fig. 1. Back seating may also be considered to be a safeguard when repacking the stuffing box. Caution must be exercised however to be sure there is no leakage from the stuffing box before completely releasing the gland bolts.



1 HOW BACKSEATING is provided on most globe and gate valves is shown by these details

14) How may *special requirements* be met? When valves are to be used in lines coming under the jurisdiction of any of the following specifications, the code and its requirements should be stated in the specifications:

*ASME (American Society of Mechanical Engineers) Boiler and Pressure Vessel Code
ASA (American Standards Association) Code for Pressure Piping
API (American Petroleum Institute)
AWWA (American Water Works Association)
AAR (Association of American Railroads)
MSS (Manufacturers' Standardization Society of the Valve and Fittings Industry)
**Underwriters Laboratories Inc., Chicago
**Factory Mutual Laboratories, Boston
*State or local piping codes

*Some portions of the ASME Boiler and Pressure Vessel Code are mandatory in most states and other localities where they have been adopted by law. The Code should be mentioned in the specifications if it applies to the valves and conditions of service.

**For sprinkler systems and other fire prevention lines, consideration should be given to the recommendations of the Factory Mutual Laboratories. Insurance companies may insist upon this. When specifying valves to be used in such lines, "Underwriter pattern" should be stated.

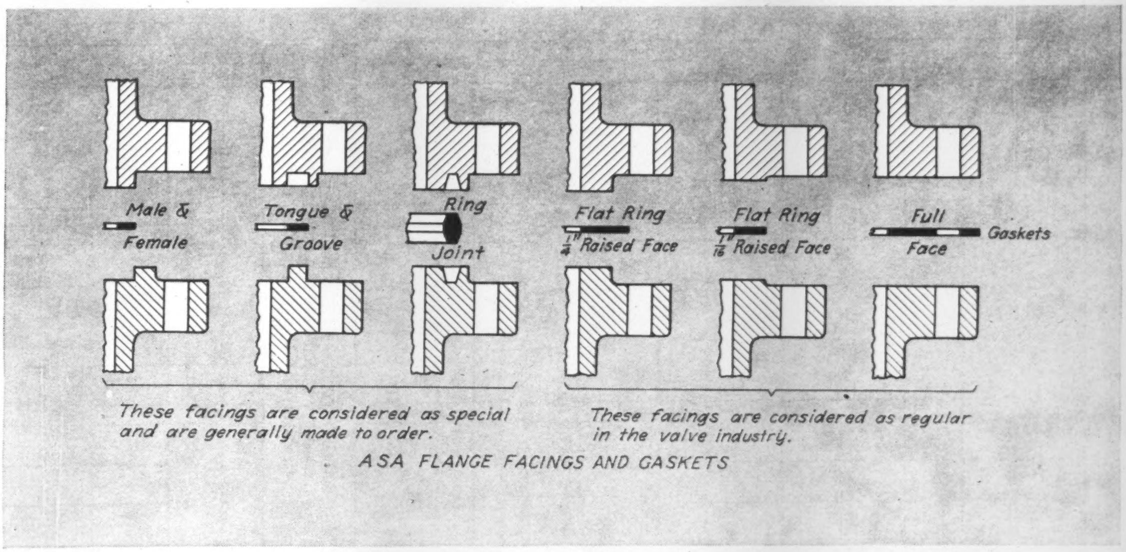
Types of Flanges, Bolting Should Be Studied Carefully

The various types of flange facings which have been standardized by the ASA are shown in Fig. 2. If the type of flange facing for the valve is not specified, it is understood that the valve will be provided with common or regular facings. Also, unless otherwise specified, the manufacturer will provide the same flange facing on both flanges. Both flanges will be male or plain face.

Flanged end joints are used extensively in sizes 2½ in. and larger. Smaller sizes are sometimes preferred, especially in the chemical industry.

Selecting the right bolts for the various applications is often neglected and not given careful consideration. Essential information pertaining to the selection of proper bolting and gaskets for flanged end valves is given in Table 1. Table 2 gives the same information for bolting unlike flanges. When specifying stud bolts, Table 3 should be helpful.

"Tongue-and-groove" and "male-and-female" flange facings are sometimes specified for special applications. These two types of joints completely retain the gasket and reduce the danger of a gasket blowout. These "T&G" and "M&F" flanges require the same bolting materials as the other flange facings.


Male & Female
Tongue & Groove
Ring Joint
Flat Ring 1/4" Raised Face
Flat Ring 1/16" Raised Face
Full Face
Gaskets
These facings are considered as special and are generally made to order.
These facings are considered as regular in the valve industry.
ASA FLANGE FACINGS AND GASKETS

2 FLANGE FACINGS are made in several standard types. Cross sections of the standard types and corresponding gaskets are shown here. Facings are considered to be regular on right, special facings are shown on left

Bolting and Gaskets for Valves

TABLE 1—BOLTING AND GASKETS for flanged end valves with like facings may be selected from this compilation of standard and code information. To use table select flanged valve required and start from proper flange classification, Col. "A". Choose line opposite the application involved, Col. "E". Follow that line across table for bolting and gasket selection. Table 1 continued on page 169

A		B	C	D	E	F	G	H	I
Flange classification			Both pressure and temperature in columns "C" and "D" must equal or exceed valve rating.			Bolts and bolt studs			
			These are not valve ratings		Requirements of codes and standards for bolting in applications named below.				
			Maximum pressure, psi	Maximum temperature, F[8]		Type	Notes	Steel	ASTM specifications
Brass[8]	150 lb.	1	150	400	Steam, ASA - B16.24	Bolts	Bolt studs should be threaded full length or have reduced shanks. (full thread preferred.) Mandatory for district heating and refinery and oil. Mandatory for 750F and higher for all others.	Carbon	A307-B
		2	225	150	Gas or liquid, ASA - B16.24				
Bronze[8]	300 lb.	3	300	550	Steam, ASA - B16.24	Bolts		Carbon	A307-B
		4	500	150	Gas or liquid, ASA - B16.24				
Cast iron	25 lb.	5	43	268	All	Bolts		Carbon	A307-B
	125 lb.	6	175	353[7]					
	250 lb.	7	250	450	Power piping	Bolts		Carbon	A307-B
		8			District heating				
		9	300	450	Refinery and oil				
		10			Refrigeration				
		11			Gas transport				
		12			Industrial gas and air	Bolts or bolt studs			
		13	400	450	All			Alloy	A193-B7
	800 lb.	14	Use lines 7 to 12 inclusive for carbon steel			Bolts or bolt studs		Carbon	A307-B
		15	800	450	All			Alloy	A193-B7
Steel	150 lb.	16	160	450	Power piping	Bolts or bolt studs		Carbon	A307-B
		17	250		District heating				
		18	275	500	Refinery and oil				
		19			Refrigeration				
		20		100	Industrial gas and air				
		21		450	Gas transport				
		22		850	All	Bolt studs		Alloy	A193-B7
		23		1000					A193-B14
	300 lb.	24	250	450	Power piping	Bolts or bolt studs		Carbon	A307-B
		25			District heating				
		26	300	100	Industrial gas and air				
		27		500	Refinery and oil				
		28			Refrigeration				
		29		450	Gas transport				
		30	720	850	All	Bolt studs		Alloy	A193-B7
		31		1000					A193-B14
	400 lb.	32	Use lines 24 to 29 inclusive for carbon steel			Bolts or bolt studs		Carbon	A307-B
		33	960	850	All	Bolt studs		Alloy	A193-B7
		34		1000					A193-B14
	600 lb.	35	1440	850					A193-B7
		36		1000					A193-B14
	900 lb.	37	2160	850					A193-B7
		38		1000					A193-B14
	1500 lb.	39	3600	850					A193-B7
		40		1000					A193-B14
	2500 lb.	41	6000	850					A193-B7
		42		1000					A193-B14

TABLE 2—BOLTING AND GASKETS for flanged end valves with unlike facings may be selected from this information ▶▶▶

Flanges	Gaskets	Bolting	Remarks
125 lb. Cast iron bolted to 150 lb. steel	Flat ring with OD to inner edge of bolt holes	Carbon steel, ASTM A307, Grade B	Remove 1/16 in. raised face from 150 lb. steel flange
	Or full face	May be alloy steel, ASTM A193, Grade B7	
300 lb. Steel bolted to 250 lb. cast iron	Flat ring with OD to inner edge of bolt holes	Carbon steel, ASTM A307, Grade B	It is considered good practice to remove raised face from steel flange

TABLE 1—(Continued from page 168)

J	K	L	M	N
Flange facing	Gaskets	Bolt and nut details		
		Carbon steel	Length	Alloy steel
Plain face with "V" grooves	Full face	Bolt and bolt stud material, ASTM - A307, Grade B (See column "I"). Nut material, ASTM - A194, Grade 2H or 3 (For bar stock see [4]). Bolting threads, ASA - I-B1.1, coarse thread series. Fit, Class 2A for bolts and bolt studs. Fit, Class 2B for nuts. Bolt heads, ASA - 18.2, see [1]. Nut dimensions, ASA - 18.2, see [3]. Wrought iron bolts per ASTM - A84, may be used up to 300 psi, 500F, for refinery and oil only.	Do not include height of crown when figuring length of bolts or bolt studs. Bolting threads should extend completely through nuts (See Table 2).	Bolt and bolt stud material, ASTM - A193, Grades B7 or B14 (See Column "I"). Nut material, ASTM - A194, Grade 2H or 3. Bolting threads, ASA - B1.4 1 in. and smaller, coarse thread series. 1 1/8 and larger, 8 pitch threads. Fit, class 2A for bolts and bolt studs. Fit, class 2B for nuts. Bolt heads, ASA - B18.2, See [2]. Nut dimensions, ASA - B18.2, See [5].
Plain face	Full face[6]			
1/16 in. Raised face	Flat ring or ring joint. For ring groove numbers see Table 6.			
¼ in. Raised face				
1/16 in. Raised face or ring groove				
1/16 in. Raised face or ring groove				
1/4 in. Raised face or ring groove				

NOTES FOR TABLE 1

1—Bolt heads of carbon steel bolts should be:
Heavy hexagon or regular square; Power piping, Gas transport, Refinery and oil transport, District heating.
Heavy or regular, hexagon or square; Industrial gas and air.
Heavy unfinished hexagon; Refrigeration.

2—Bolt heads of alloy steel bolting should be:
Heavy semi-finished hexagon; Power piping, District heating.
Heavy hexagon; Industrial gas and air, Refinery and oil transport.
Heavy hexagon or regular square; Gas transport.
Heavy unfinished hexagon; Refrigeration.

3—Nuts for carbon steel bolts should be:
Heavy semi-finished hexagon; Power piping, District heating.
Heavy hexagon or heavy square; Industrial gas and air, Refinery and oil transport.
Heavy hexagon; Gas transport.
Heavy unfinished hexagon; Refrigeration.

4—For all industries except refinery and oil transport, nuts cut from bar stock may be used with cast iron flanges, up to 250 psi, when made as described in ASA B 31.1 Sizes ½ in. and smaller may be used by all, and for any flanges.

5—Nuts for alloy steel bolts should be:
Heavy semi-finished hexagon; Power piping, District heating.
Heavy hexagon; Refinery and oil transport, Industrial gas and air, Gas transport.
Heavy unfinished hexagon; Refrigeration.

6—Ring gaskets are permitted by the code using carbon steel bolting per ASTM-A307B.

7—It is reasonable to presume that 125 lb cast iron valves could be used for temperatures up to 450 F at reduced pressures, providing they are so recommended by the manufacturer.

8—For service temperatures below zero, an allowance for brittleness should be considered for bolting. This is the author's recommendation; all others are covered by codes and standards.

9—All facings shown in Col. "J" except the ring groove are considered as regular facings.

TABLE 3—STUD BOLTS FOR FLANGED JOINTS with like facings shown here with other applications of same stud bolts also given. To use table enter column at service pressure and type of flange facing to be used. Find nominal pipe size in column and select stud bolt diameter and length in columns 1 and 2. Table 3 continued on page 171

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
Stud bolt		Nominal pipe size, in. Primary service pressure, psi, and flange facing																		
		150		300		400			600			900			1500			2500		
Diameter, in.	Length, in.	1/16 in. Raised	Ring joint	1/16 in. Raised	Ring joint	1/4 in. Raised	M & F T & G	Ring joint	1/4 in. Raised	M & F T & G	Ring joint	1/4 in. Raised	M & F T & G	Ring joint	1/4 in. Raised	M & F T & G	Ring joint	1/4 in. Raised	M & F T & G	Ring joint
1/2	2¼	½, ¾																		
	2½	1, 1¼		½																
	2¾	1½								½										
	3		1, 1¼		½				½		½									
	3¼		1½																	
5/8	2¾			¾																
	3	2		1, 1¼						¾										
	3¼	2½		2	¾				¾	1	¾									
	3½	3, 3½, 4	2		1, 1¼				1	1¼	1									
	3¾		2½						1¼	2	1¼									
	4		3, 3½, 4		2				2											
	4¼										2									
3/4	3½			1½																
	3¾	5, 6		2½						1½						½				
	4	8		3	1½				1½		1½				½	¾	½			
	4¼		5, 6	3½, 4						2½					¾		¾			
	4½		8	5	2½				2½	3									½, ¾	
	4¾			6	3				3		2½							½, ¾		½, ¾
	5				3½, 4						3									
	5¼				5															
	5½				6															
7/8	4½	10, 12														1, 1¼				
	4¾														1, 1¼		1, 1¼			
	5		10, 12				4			3½									1	
	5¼			8		4	5		3½	4			3			2		1		1
	5½					5	6	4	4		3½	3			2					
	5¾					6		5			4			3			2			
	6				8			6												
1	5	14														1½				
	5¼	16													1½		1½			
	5½		14																1¼	
	5¾		16													2½		1¼		
	6			10						5					2½					1¼
	6¼						8		5	6							2½			
	6½					8			6		5								2	
	6¾				10			8			6							2		
	7																			2
1-1/8	5¾	18																		
	6	20																		
	6¼		18										4						1½	
	6½		20	12								4				3		1½		
	6¾			14										4	3					1½
	7						10										3			
	7¼				12	10				8			6						2½	
	7½				14			10	8			6		6				2½		
	7¾										8									2½
1-1/4	6¾	24																		
	7												5							
	7¼		24	16								5				4				
	7½			18			12							5	4					
	7¾					12	14										4			
	8			20	16	14		12		10										
	8¼				18			14	10	12									3	
	8½								12		10							3		
	8¾				20						12									3
1-3/8	8¼						16						8							
	8½					16	18					8								
	8¾					18		16		14			10	8						
	9							18	14			10								
	9¼										14			10						
	9½												12							
	9¾											12				6				

TABLE 3—(Continued) STUD BOLTS for flanged joints with like facings shown here. To use table enter column at service pressure and type of flange facing to be used. Find nominal pipe size in column and select stud bolt diameter and length in columns 1 and 2

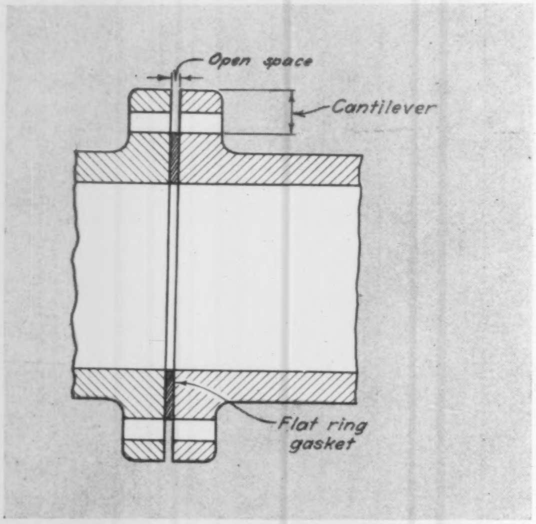
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
Stud bolt		**Nominal pipe size, in.** Primary service pressure, psi, and flange facing																		
Diameter, in.	Length, in.	150		300		400			600			900			1500			2500		
		1/16 in. Raised	Ring joint	1/16 in. Raised	Ring joint	1/4 in. Raised	M & F T & G	Ring joint	1/4 in. Raised	M & F T & G	Ring joint	1/4 in. Raised	M & F T & G	Ring joint	1/4 in. Raised	M & F T & G	Ring joint	1/4 in. Raised	M & F T & G	Ring joint
1-3/8	10													12	6					
	10¼																6			
1-1/2	9			24																
	9¼						20									5				
	9½					20				16					5				4	
	9¾							20	16								5	4		
	10				24						16									
	10¼												14							4
	10½											14								
	11													14						
1-5/8	10¼									18										
	10½								18											
	10¾										18		16							
	11									20		16				8				
	11¼								20						8					
	11½										20			16						
	11¾																8			
1-3/4	10¼						24													
	10½					24														
	11							24												
	11¼																		5	
	11½																	5		
	12¼																			5
1-7/8	12½									24			18							
	12¾								24			18								
	13															10				
	13¼										24			18	10					
	13½																10			
2	13¼												20						6	
	13½											20						6		
	14													20						6
	14½															12				
	14¾														12				8	
	15																	8		
	15¼																12			
	15½																			8
2-1/4	15¾															14				
	16														14					
	16¾																14			
2-1/2	16¾												24							
	17											24								
	17¼															16				
	17½														16					
	17¾													24						
	18½																16			
	18¾																		10	
	19																	10		
	20																			10
2-3/4	19															18				
	19¼														18					
	20¼																18			
	20¾																		12	
	21																	12		
	22																			12
3	20¾															20				
	21														20					
	22¼																20			
3-1/2	23¾															24				
	24														24					
	25½																24			

Gaskets Are Important, Too

The use of proper gaskets is often the answer to the problem of maintaining tight joints. Obviously, gaskets must be selected which are suitable for the fluid to be used in the line. For example, oilproof gaskets must be used for oil piping. There are numerous standard designs, many of which are shown in Table 4.

The following types and their applications along with notes about them are given below:

1) Full face gaskets should always be used with plain face flanges on brass, bronze, and on 25 or 125 lb cast iron valves. These should always be full face non-metal gaskets. The reason for this choice is because any gasket having an outside diameter less than that of the flange may result in the flange metal being overstressed due to the bolting load imposed in these low pressure designs. With a narrow gasket, the flanges will have an open space beyond the outside edge of the gasket. This causes the flange to assume the functions of a cantilever, which can be seen in Fig. 3. Nonmetal gaskets are preferred for these conditions because they require less unit loading to make a tight joint than do metal gaskets. All nonmetal gaskets should conform to ASA B16.21.



3 USE OF NARROW GASKETS with plain face flange connections may result in flange metal being over stressed due to cantilever formed as shown here. To prevent this, use gasket covering entire flange face as shown at right in Fig. 2 on page 167

Fabrication details in the Code for Pressure Piping, ASA-B 31.1 Section 6, permit the use of flat ring gaskets for 25 and 125 lb cast iron flanges. On this basis, some engineers specify flat ring gaskets except when used for vacuum applications and for some water lines. Satisfactory results are claimed for this type of flat ring gasket. Nevertheless, the author prefers that full face gaskets be used with these flanges, regardless of service. It is not the service that causes failure; it is the excessive bolting strain.

2) The 1/16 and ¼ in. raised face flanges are suitable for either metal, nonmetal, or any of the gaskets shown in Table 4, all of the flat ring type. Even though some of these gaskets may have curved or corrugated surfaces, they still may be considered as flat ring gaskets if their outside diameters extend to the insides of the bolt holes. This outside diameter makes it possible to properly center the gasket by resting the outside edge against the bolts when it is installed.

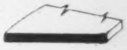
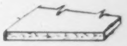
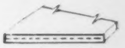
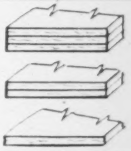
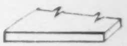
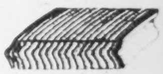
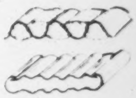
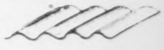
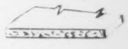
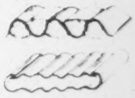
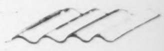
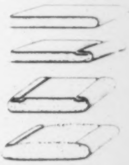
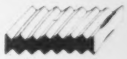
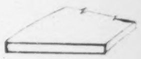
3) For steel valves, gaskets must be capable of holding high pressures. With standard raised face or large male and female faces, the inside diameter of metal gaskets should be not less than the inside diameter of large tongue and groove dimensions given in column 15, Table 5.

4) Gaskets of metal, metal jacketed asbestos, or asbestos inserted metal jackets are suitable for steel valves having raised face flanges, small tongue-and-groove flanges, or large and small male-and-female face flanges, providing the inside diameters are the same as covered in paragraph 3 above.

Cross-sections of both metal and nonmetallic gaskets are shown in Table 4. ASA B16.5-1957 provides data and dimensions of various gaskets for use with raised face flanges. Other than these, and gaskets for ring joints, there is no American standard for metal gaskets.

5) Gaskets given in paragraph 4 except solid

TABLE 4—MATERIALS AND CONSTRUCTION for different standard types of gaskets and classified by group number are shown here

Gasket group number	Gasket material	Sketches
I	**Rubber** without fabric or a high percentage of asbestos fiber	
	Asbestos with suitable binders for operating conditions, in thicknesses 1/8 and 1/16 in.	
	Rubber with cotton fabric insertion	
	Rubber with asbestos fabric insertion, with or without wire reinforcement; one-, two-, or three-ply	
	Vegetable fiber	
	Spiral wound metal, asbestos filled (carbon or stainless)	
	Corrugated metal, asbestos inserted or jacketed asbestos filled. (soft aluminum, soft copper or brass, iron or soft steel)	
	Corrugated metal, in soft aluminum and soft copper or brass	
II	**Asbestos** with suitable binders for operating conditions, 1/32 in. thick	
	Corrugated metal, asbestos inserted or jacketed asbestos filled (monel or 4-6 percent chrome stainless steels)	
	Corrugated metal (iron or soft steel, monel or 4-6 percent chrome stainless steels)	
	Flat metal, jacketed asbestos filled (soft aluminum, soft copper or brass, iron or soft steel, monel, 4-6 percent chrome stainless steels)	
	Grooved metal (soft aluminum, soft copper or brass, iron or soft steel, monel or 4-6 percent chrome stainless steels)	
	Solid flat metal (soft aluminum)	
III	**Solid flat metal** (soft copper or brass, iron or soft steel, monel or 4-6 percent chrome stainless steels)	

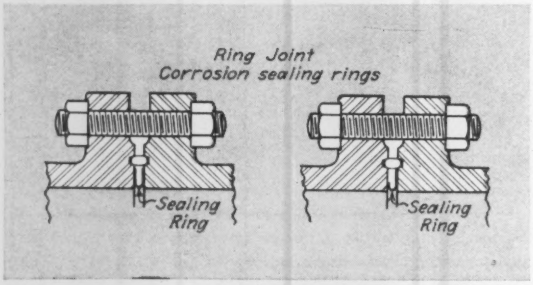
metal may be used with large tongue and groove facings. The width of this facing makes it impractical to obtain proper unit loading on a solid metal gasket.

6) When discussing nonmetallic gaskets, there are very important pressure and temperature limitations for the various types of gasket materials that should be considered in the selection for any specific applications. Asbestos composition gaskets may be used up to 750 F. In "refinery and oil transportation" lines they are limited to a maximum pressure of 400 psi. Paper, vegetable fiber, rubber, or rubber-inserted gaskets should not be used above 250 F. Noncombustible material should be used above that temperature or where the gasket will be adjacent to hot lines.

All nonmetal gaskets should conform to ASA-B16.21. Table 5 taken from ASA B16.21 indicates the class and valve sizes on which the different gaskets can be used.

7) Ring joint gaskets, as covered in ASA B-16.20, are made in a number of different metals. They range all the way from soft steel to various stainless steels. The choice depends upon the flange metal with which they are to be used and the corrosion problems involved. They should be specified by giving the nominal valve size and the ring groove number. Table 6 lists the ring and groove numbers and pitch diameters for various valve sizes. Specifications should also state the gasket material desired for application. When the corrosive service is exceptionally severe, sealing rings similar to those shown in Fig. 4 are sometimes used.

Ring joint gaskets are made in two shapes — octagon and oval. Oval rings fit grooves having a flat or round bottom. Octagonal rings only fit grooves having flat bottoms. The round bottom groove has been dropped from ASA B16.20.



4 FOR SEVERE CORROSIVE SERVICE, ring joint sealing rings may be used

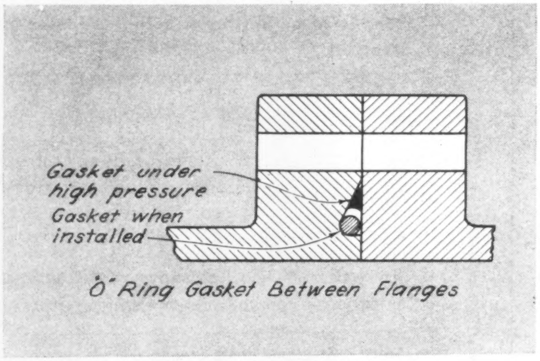
The ring joint with an octagon or oval shaped metallic gasket has been used for many years in oil refineries for high pressure, high temperature lines. Such joints proved so successful in that service that they became popular in power and other piping applications. Ring joints are used where it is necessary to break the joint in order to repair or service equipment. However, in power piping applications, welded joints are usually used where the joint does not have to be broken.

8) Recently, o-ring gaskets have become quite popular for high hydraulic pressures. They serve many sealing problems, and are used for flanged joints.

There are several methods used when finishing flange faces for o-rings. One method which has proven very satisfactory is shown in Fig. 5. Only one flange is grooved, as shown. The original gasket is circular and fits into the deepest part of the groove. When pressure is applied, the ring is forced outward into the tapered part of the groove. This makes a tight joint at the highest pressure the flanges or bolts will hold. These o-rings are made of synthetic rubber and other flexible materials.

9) When specifying gaskets, the following information should be given:

a) Type of gasket (full face, flat ring, etc.)
b) Size and class of valve
c) Maximum pressure and temperature to which gasket will be subjected.



5 O-RING GASKETS are frequently used where high hydraulic pressures are encountered. One method of finishing the flange facings for O-rings is shown here

TABLE 5—DIMENSIONS OF NON-METALLIC GASKETS for the various valve classes and sizes

		2		3	4	5	6	7	8	9	10	11	12	13	14	15
Pipe flange sizes, in.																
Reference				Full face		Flat ring							Male and female		Tongue and groove	
													Small	Large	Small	Large
MSS	Brass	SP-2	150 lb	1/2-12	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
	18-8	SP-2	300 lb	. . .	1/2-8	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
		SP-42	150 lb	1/4-12	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Example ↓	Cast iron	B16b2	25 lb	4-96[1]	. . .	. . .	. . .	4	5-96	. . .	. . .	. . .	. . .	. . .	. . .	. . .
		B16.1	125 lb	1-48[1,2]	. . .	. . .	. . .	1-48[2]	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
		B16g1	175 lb	2-8	. . .	. . .	. . .	2-8	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
		B16b	250 lb	. . .	. . .	1-3	3 1/2-48	. . .	. . .	. . .	. . .	. . .	. . .	1-24	. . .	1-24
		B16.16	300 lb	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	1/4-4	5-12
		B16b1	800 lb	. . .	. . .	2-12	. . .	3 1/2	. . .	. . .	. . .	. . .	. . .	2-12	. . .	2-12
ASA	Steel	B16e	150 lb	1-24[2]	. . .	. . .	. . .	1/2-24[2]	. . .	. . .	. . .	. . .	1/2-24	1/2-24	. . .	1/2-24
		B16e	300 lb	. . .	. . .	1/2-3	3 1/2-24	. . .	. . .	. . .	. . .	. . .	1/2-24	1/2-24	. . .	1/2-24
		B16e	400 lb	. . .	. . .	1/2-3	. . .	3 1/2	. . .	4-24	. . .	. . .	1/2-24	1/2-24	. . .	1/2-24
		B16e	600 lb	. . .	. . .	1/2-24	. . .	3 1/2	. . .	. . .	. . .	. . .	1/2-24	1/2-24	. . .	1/2-24
		B16e	900 lb	. . .	. . .	. . .	. . .	. . .	. . .	. . .	1/2-2 1/2	3-24	1/2-24	1/2-24	. . .	1/2-24
		B16e	1500 lb	. . .	. . .	. . .	. . .	. . .	. . .	. . .	1/2-24	10	1/2-24	1/2-24	. . .	1/2-24

Gasket diameters, in.

Nominal pipe size, in.	Full face and flat ring gasket ID	OD	OD	OD	OD	OD	OD	OD	OD	OD	ID X OD	ID X OD	ID X OD	ID X OD
1/4	9/16	2 1/2	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . . . . .	. . . .	1 x 1 3/8	. . . .
3/8	11/16	2 1/2	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . . . . .	. . . .	1 x 1 3/8	. . . .
1/2	27/32	3 1/2	3 3/4	2 1/8	. . .	1 7/8	. . .	. . .	2 1/2	. . .	x 23/32	27/32x 1 3/8	1 x 1 3/8	1 x 1 3/8
3/4	1 1/16	3 7/8	4 5/8	2 5/8	. . .	2 1/4	. . .	. . .	2 3/4	. . .	x 15/16	1 1/16 x1 11/16	1 5/16 x 1 11/16	1 5/16 x 1 11/16
1	1 5/16	4 1/4	4 7/8	2 7/8	. . .	2 5/8	. . .	. . .	3 1/8	. . .	x 1 3/16	1 5/16 x 2	1 1/2 x 1 7/8	1 1/2 x 2
1 1/4	1 21/32	4 5/8	5 1/4	3 1/4	. . .	3	. . .	. . .	3 1/2	. . .	x 1 1/2	1 21/32x 2 1/2	1 7/8 x 2 1/4	1 7/8 x 2 1/2
1 1/2	1 29/32	5	6 1/8	3 3/4	. . .	3 3/8	. . .	. . .	3 7/8	. . .	x 1 3/4	1 29/32x 2 7/8	2 1/8 x 2 1/2	2 1/8 x 2 7/8
2	2 3/8	6	6 1/2	4 3/8	. . .	4 1/8	. . .	. . .	5 5/8	. . .	Purchaser to specify ID of pipe x 2 1/4	2 3/8 x 3 5/8	2 7/8 x 3 1/4	2 7/8 x 3 5/8
2 1/2	2 7/8	7	7 1/2	5 1/8	. . .	4 7/8	. . .	. . .	6 1/2	. . .	x 2 11/16	2 7/8 x 4 1/8	3 3/8 x 3 3/4	3 3/8 x 4 1/8
3	3 1/2	7 1/2	8 1/4	5 7/8	. . .	5 3/8	. . .	. . .	6 7/8	6 5/8	x 3 5/16	3 1/2 x 5	4 1/4 x 4 5/8	4 1/4 x 5
3 1/2	4	8 1/2	9	See Col. 7	6 1/2	6 3/8	. . .	. . .	. . .	. . .	x 3 13/16	4 x 5 1/2	4 3/4 x 5 1/8	4 3/4 x 5 1/2
4	4 1/2	9	10	7 5/8	7 1/8	6 7/8	. . .	7	8 1/4	8 1/8	x 4 5/16	4 1/2 x 6 3/16	5 3/16 x 5 11/16	5 3/16 x 6 3/16
5	5 9/16	10	11	9 1/2	8 1/2	7 3/4	7 7/8	8 3/8	10	9 3/4	x 5 3/8	5 9/16 x 7 5/16	. . . .	6 5/16 x 7 5/16
6	6 5/8	11	12 1/2	10 1/2	9 7/8	8 3/4	8 7/8	9 3/4	11 1/8	11 3/8	x 6 3/8	6 5/8 x 8 1/2	. . . .	7 1/2 x 8 1/2
8	8 5/8	13 1/2	15	12 5/8	12 1/8	11	11 1/8	12	13 7/8	14 1/8	x 8 3/8	8 5/8 x10 5/8	. . . .	9 3/8 x 10 5/8
10	10 3/4	16	. . .	15 3/4	14 1/4	13 3/8	13 5/8	14 1/8	See Col.11	17 1/8	x 10 1/2	10 3/4 x12 3/4	. . . .	11 1/4 x 12 3/4
12	12 3/4	19	. . .	18	16 5/8	16 1/8	16 3/8	16 1/2	20 1/2	19 5/8	x 12 1/2	12 3/4 x15	. . . .	13 1/2 x 15
14 OD	14	21	. . .	19 3/8	19 1/8	17 3/4	18	19	22 3/4	20 1/2	x 13 3/4	14 x16 1/4	. . . .	14 3/4 x 16 1/4
16 OD	16	23 1/2	. . .	22 1/4	21 1/4	20 1/4	20 1/2	21 1/8	25 1/4	22 5/8	x 15 3/4	16 x18 1/2	. . . .	16 3/4 x 18 1/2
18 OD	18	25	. . .	24 1/8	23 1/2	21 5/8	22	23 3/8	27 3/4	25 1/8	x 17 3/4	18 x21	. . . .	19 1/4 x 21
20 OD	20	27 1/2	. . .	26 7/8	25 3/4	23 7/8	24 1/4	25 1/2	29 3/4	27 1/2	x 19 3/4	20 x23	. . . .	21 x 23
24 OD	24	32	. . .	31 1/8	30 1/2	28 1/4	28 3/4	30 1/4	35 1/2	33	x 23 3/4	24 x27 1/4	. . . .	25 1/4 x 27 1/4
30 OD	30	38 3/4	. . .	. . .	37 1/2	34 3/4	35 1/8	. . .	. . .	. . .	. . . . . .	. . . .	. . . .	. . . .
36 OD	36	46	. . .	. . .	44	41 1/4	41 7/8	. . .	. . .	. . .	. . . . . .	. . . .	. . . .	. . . .
42 OD	42	53	. . .	. . .	50 3/4	48	48 1/2	. . .	. . .	. . .	. . . . . .	. . . .	. . . .	. . . .
48 OD	48	59 1/2	. . .	. . .	58 3/4	54 1/2	55	. . .	. . .	. . .	. . . . . .	. . . .	. . . .	. . . .
54 OD	54	66 1/4	. . .	. . .	. . .	. . .	61 3/4	. . .	. . .	. . .	. . . . . .	. . . .	. . . .	. . . .
60 OD	60	73	. . .	. . .	. . .	. . .	68 1/8	. . .	. . .	. . .	. . . . . .	. . . .	. . . .	. . . .
72 OD	72	86 1/2	. . .	. . .	. . .	. . .	81 3/8	. . .	. . .	. . .	. . . . . .	. . . .	. . . .	. . . .
84 OD	84	99 3/4	. . .	. . .	. . .	. . .	94 1/4	. . .	. . .	. . .	. . . . . .	. . . .	. . . .	. . . .
96 OD	96	113 1/4	. . .	. . .	. . .	. . .	107 1/4	. . .	. . .	. . .	. . . . . .	. . . .	. . . .	. . . .

[1] 25 lb and 125 lb cast iron flanges use the same full face gaskets, except for diameter of bolt hole punchings.

[2] In all cases where 125 lb cast iron flanges are bolted to a 150 lb steel flange with raised face removed from the latter, either a full face or flat ring gasket may be used.

USE OF TABLE. The table has been arranged to facilitate the selection of a proper gasket for the flange material, rating, and type of facing used.

Example: To select a flat ring gasket for 2 in., 250 lb cast iron pipe flange, consult the upper portion of the table "Pipe flange sizes," and in Col. 2 "Reference" locate the material "Cast Iron" and the pressure rating "250 lb," then follow across to locate the type of gasket "Flat ring" and the proper size group "1-3" in Col. 5. Reading down Col. 5 to the lower portion of the table "Gasket diameters" and opposite the 2 in. nominal pipe size (Col. 1) is the dimension of the outside diameter of the gasket, 4-3/8 in. The inside diameter is given in Col. 2 as 2-3/8 in. The correct size gasket is therefore 2-3/8 x 4-3/8. This example is illustrated by the heavy broken line in the table.

Several Other Types of End Connections

Screwed end joints 2 in. and smaller are easily assembled and, when properly installed, give comparatively little leakage trouble. There are a number of 2½ and 3 in. screwed end valves made, and they require considerable force to make a tight joint, even with a large wrench. These sizes might preferably be flanged or welded. For steam pressures above 600 psi the 1½ in. size should be the largest screwed end size valve to be used, in the author's opinion.

Butt weld ends for steel valves have become popular for most high pressure, high temperature steam lines. These joints are also being used for many other services, such as large oil and gas pipe lines and boiler feed lines. They are used in practically every standard size, and it would be difficult to name any service for which welded piping has not been adopted to some extent.

Backing rings are used to prevent weld drippings and spatter from entering the pipe. With the metal arc method such rings are oftentimes necessary. They are made in several different designs.

Socket welding ends on small steel valves are popular and are generally preferred in sizes 2 in. and smaller, rather than the butt weld type of end connection. The pipe end fits into the valve socket and therefore assures proper alignment. The valve end of the pipe requires no other support while welding, and weld metal cannot get into the inside of the pipe. The pipe can be inserted the full depth of the socket with a minimum gap of 1/16 in. as suggested by the Code B31.1—1955.

Solder ends were developed for heating and low pressure industrial installations. Valves with solder ends are made of brass or bronze, with sockets to fit seamless copper tubing. These solder joints should never be used to transport flammable fluids. If a fire caused the solder to melt such fluid would feed the fire.

Brazed ends are frequently used to connect non-ferrous pipe or tubing with bronze valves.

Hub end valves are made for water lines and are generally used underground. Nonrising stem gate and swing check valves are the types regularly used. The hubs are designed for cast iron pipe.

Hub end gate valves are provided with a 2 in. square operating unit instead of the usual handwheel. When specifying hub end valves, the class and size of cast iron pipe should be specified.

If cement or other mechanical joint pipe is to be used the specifications should state the size and class of pipe to be used. Also, it should be stated whether the pipe is machined or unfinished.

When Should Cast Iron Valves Be Used?

Cast iron valves are used for many services including steam, water, oil, gas, and air. Although most valves of this type are brass trimmed, there are many all-iron valves made for service where brass is not suitable because of corrosive conditions. They are made in practically the entire range of sizes up to 72 in. and sometimes larger.

For steam service it is considered good practice to use 150 lb steel valves rather than 125 lb cast iron valves in sizes 18 in. and larger.

There are three classes of gray iron regularly used in the manufacture of cast iron valves. These are covered in ASTM A126, which lists only strength requirements. It has no ductility requirements.

Class A — 21000 psi, Minimium tensile

strength, generally used for small valves at low pressures.

Class B — 31000 psi, Minimum tensile strength, for higher pressures and larger sizes.

Class C — 41000 psi, Minimum tensile strength, often used for very large valves in any pressure class.

Valves made of these metals have given many years of satisfactory service. Care however must always be exercised to avoid selecting such valves for use where they are likely to be subjected to severe shock or line strains.

The temperature limitation for these cast iron valves has for years been 450 F. This maximum limitation is the result of unfortunate experience years ago. With the advent of superheated steam many cast iron valves were used at temperatures above 500 F. As a result, the metal after several years' service deteriorated and became distorted. Following this action it sometimes disintegrated to a point where it could be cut with a knife, unless the valve burst first. There were cases where cast iron internal liners in steel valves grew in diameter until they were larger than the opening through which they were inserted. Therefore the temperature limitation of 450 F for cast iron valves was established. At that time steel was the only suitable metal available for valves at temperatures above 450 F.

Large conventional cast iron gate valves have been used in underground pipe line installations. Crawling and shifting of these long underground lines is quite common, and this motion naturally results in severe strains being transmitted to the flanges of the valve. As a result, the end flanges have often cracked causing considerable damage. Therefore, many cast iron valves 14 in. and larger in these underground lines have been replaced by steel. The reason smaller sizes of cast iron valves in these applications have not been affected by this problem is that the smaller pipe provides greater flexibility which causes less strain on the valve.

The ASTM has developed a new gray iron specification A278, which has probably not yet been used for valves but probably will be used in the near future. It covers classes from 20,000 to 60,000 psi inclusive. This is a heat treated iron with stable carbide, resulting in an improved stability over ASTM A126. It has a maximum temperature service rating of 650 F.

TABLE 6—RING GROOVE numbers and pitch diameters for various valve classes and sizes. All dimensions are in inches

1	2	3	4	5	6	7	8	9
Nominal pipe size							Groove no.	Groove pitch diam.
150 psi	300 psi	400 psi[2]	600 psi[3]	900 psi	1500 psi	2500 psi		
...	½	...	½	...	...	...	R11	1 11/32
...	...	...	...	...	½	...	12	1 9/16
...	¾	...	¾	...	...	½	13	1 11/16
...	...	...	...	...	¾	...	14	1 3/4
1	...	...	...	...	...	...	15	1 7/8
...	1	...	1	...	1	¾	16	2
1¼	...	...	...	...	...	...	17	2 1/4
...	1¼	...	1¼	...	1¼	1	18	2 3/8
1½	...	...	...	...	...	...	19	2 9/16
...	1½	...	1½	...	1½	...	20	2 11/16
...	...	...	...	...	...	1¼	21	2 27/32
2	...	...	...	...	...	...	22	3 1/4
...	2	...	2	...	...	1½	23	3 1/4
...	...	...	...	...	2	...	24	3 3/4
2½	...	...	...	...	...	...	25	4
...	2½	...	2½	...	...	2	26	4
...	...	...	...	...	2½	...	27	4 1/4
...	...	...	...	...	...	2½	28	4 3/8
3	...	...	...	...	...	...	29	4 1/2
...	[1]	...	[1]	...	...	...	30	4 5/8
...	3[1]	...	3[1]	3	...	...	31	4 7/8
...	...	...	...	...	...	3	32	5
3½	...	...	...	...	...	...	33	5 3/16
...	3½	...	3½	...	...	...	34	5 3/16
...	...	...	...	...	3	...	35	5 3/8
4	...	...	...	...	...	...	36	5 7/8
...	4	4	4	4	...	...	37	5 7/8
...	...	...	...	...	...	4	38	6 3/16
...	...	...	...	...	4	...	39	6 3/8
5	...	...	...	...	...	...	40	6 3/4
...	5	5	5	5	...	...	41	7 1/8
...	...	...	...	...	...	5	42	7 1/2
6	...	...	...	...	...	...	43	7 5/8
...	...	...	...	...	5	...	44	7 5/8
...	6	6	6	6	...	...	45	8 5/16
...	...	...	...	...	6	...	46	8 5/16
...	...	...	...	...	...	6	47	9
8	...	...	...	...	...	...	48	9 3/4
...	8	8	8	8	...	...	49	10 5/8
...	...	...	...	...	8	...	50	10 5/8
...	...	...	...	...	...	8	51	11
10	...	...	...	...	...	...	52	12
...	10	10	10	10	...	...	53	12 3/4
...	...	...	...	...	10	...	54	12 3/4
...	...	...	...	...	...	10	55	13 1/2
12	...	...	...	...	...	...	56	15
...	12	12	12	12	...	...	57	15
...	...	...	...	...	12	...	58	15
14	...	...	...	...	...	...	59	15 5/8
...	...	...	...	...	...	12	60	16
...	14	14	14	...	...	...	61	16 1/2
...	...	...	...	14	...	...	62	16 1/2
...	...	...	...	...	14	...	63	16 1/2
16	...	...	...	...	...	...	64	17 7/8
...	16	16	16	...	...	...	65	18 1/2
...	...	...	...	16	...	...	66	18 1/2
...	...	...	...	...	16	...	67	18 1/2
18	...	...	...	...	...	...	68	20 3/8
...	18	18	18	...	...	...	69	21
...	...	...	...	18	...	...	70	21
...	...	...	...	...	18	...	71	21
20	...	...	...	...	...	...	72	22
...	20	20	20	...	...	...	73	23
...	...	...	...	20	...	...	74	23
...	...	...	...	...	20	...	75	23
24	...	...	...	...	...	...	76	26 1/2
...	24	24	24	...	...	...	77	27 1/4
...	...	...	...	24	...	...	78	27 1/4
...	...	...	...	...	24	...	79	27 1/4

Notes: 1) For ring joints with lapped flanges in the 300 and 600 psi standards, number R30 is used instead of R31. 2) Use 600 psi in sizes ½ to 3½ for 400 psi pressure. 3) Use 1500 psi is sizes ½ to 2½ for 900 psi pressure.

A great deal of progress has been made in the development of cast iron during recent years. The most significant so far as valves are concerned is the nodular iron covered by ASTM 395. This iron has an elongation of 15 percent in 2 in., and is recommended for a maximum temperature of 650 F. Large nodular iron valves have been made for use on oil tankers and for other services and have proved to be satisfactory.

Nodular iron will probably become one of the metals regularly used for valves. It might, however, be well to await a longer period of actual field service before considering it generally as a substitute for steel. ASTM has further specifications for nodular iron under consideration.

Malleable iron is seldom used for valves larger than 2 in. size. Its main advantage is its superior shock resistance and high tensile strength.

When Should Steel Valves Be Used?

Steel valves are made from many different alloys and, consequently, are used for most services. There are, however, corrosive conditions where other materials are more suitable. The main advantages of steel valves are high strength, ductility, and resistance to high temperatures.

The pressure-temperature ratings of steel valves are covered by ASA B16.5. These ratings are quite universally adopted by the valve industry. The most convenient way to obtain the rating of a particular valve is to refer to the manufacturer's literature. Practically all valves commercially available are made from carbon steel unless special alloys are required by the service conditions.

Forged steel valves are preferred by some engineers in the small sizes because of trouble that has sometimes been experienced with porosity in cast steel. Great progress has been made within the last decade in the production of tight steel castings. When the valves are properly designed and high grade modern foundry practice is used, cast steel valves are quite reliable. Radiography, magnetic particle testing, and other new methods of detecting flaws may also be used.

When Should Nonferrous Valves Be Used?

Brass or bronze valves are commonly used for steam, water, oil, air, and gas lines because of their resistance to corrosion. They are generally made in sizes 3 in. and smaller, although special brass valves are frequently made in larger sizes especially for Navy and marine service.

The terms *brass* and *bronze* have been rather loosely used because of the lack of consistent definitions. Definitions of these are given in ASTM-B119 as follows:

Brass, ASTM-B62: Composition brass or ounce metal, often referred to as 85-5-5-5. Maximum temperature, 422 F.

(The term "ounce" resulted from the original formula. It was described as one pound of copper to one ounce each of tin, lead, and zinc.)

Bronze, ASTM-B61: Steam or valve bronze; Maximum temperature, 550 F.

Different manufacturers vary in the use of these metals for valves. It is fairly common practice to use brass valves up to 150 psi and bronze for higher pressures. Some valve manufacturers however call all nonferrous valves "bronze," regardless of which composition is used.

If a valve is recommended for temperatures above 422 F it should be bronze. Valves for lower temperatures may be brass or bronze. It is good practice to use bronze for high hydraulic pressures.

[The author and editors wish to acknowledge the assistance provided in assembling the information for this article from engineers at Sargent and Lundy, the engineering department of Crane Co., the American Society of Mechanical Engineers and the American Standards Association, and many others. Tables 3 and 5 have been abstracted with permission from ASA B16.5 and ASA B16.21, respectively. The information in Tables 4 and 6 have been adapted from similar data in ASA B16.5 and ASA B16.20, respectively. This discussion of valve selection for piping applications will be continued in future issues.]

SHOW SECTION

Previews of the Exhibits
at the 14th International
Heating & Air-Conditioning
Exposition

PHILADELPHIA

JANUARY 26-29

Program for the 65th Annual
Meeting of the American
Society of Heating and Air-
Conditioning Engineers

THE PHILADELPHIA STORY

Here's a complete preview of the heating and air conditioning exposition and the ASHAE annual meeting. Both open January 26 in Philadelphia

THE 14TH INTERNATIONAL Heating & Air-Conditioning Exposition and the 65th annual meeting of the American Society of Heating and Air-Conditioning Engineers open in Philadelphia Monday, January 26. The show will run Monday through Thursday, from noon until 10 p.m., and the society meeting ends Wednesday evening with a banquet. The exposition will be held in the Convention Hall, and the headquarters hotel for the society is the Bellevue Stratford.

Returning to Philadelphia after four years, the exposition is expected to surpass the previous display there in size. There will be some 450 exhibits, with heavy attendance to come from all parts of the U.S. and abroad.

While the first session of the ASHAE's meeting is scheduled for 9 a.m. Monday, registration will start at the hotel on Sunday, January 25, at 10 a.m. Among the non-technical events are a welcome luncheon on Monday, with Mayor Richardson Dilworth of Philadelphia as the speaker and E. K. Wagner, general chairman of the arrangements committee for the meeting, as toastmaster. President Eric A. Walker of Pennsylvania State is the scheduled speaker for the Wednesday banquet, with Albert J. Nesbitt as toastmaster.

A complete preview of the exhibits at the exposition, with diagrams of the show layout, is given in the following pages, and the accompanying program gives details of the ASHAE meeting.

While not an official part of the ASHAE meeting, an Illini dinner for University of Illinois engineering alumni will be held Tuesday evening, January 27, at the Bellevue Stratford.

Quick Picture of Busy Week

THE EXPOSITION . . . .

Opens Monday, January 26, at 12 noon at the Convention Hall and daily Tuesday through Thursday at 12 noon. Closing hour each day is 10 p.m. (Note that final day of the Show is Thursday, rather than Friday as in previous years.) See list of exhibitors and their exhibits, and diagrams of the Exposition layout, on the following pages for full information on what to see where, and names of those manning the booths.

ASHAE MEETING . . . .

Technical sessions at 9 a.m. Monday, simultaneous sessions at 9:30 a.m. Tuesday, simultaneous sessions at 9:30 a.m. and again at 2 p.m. Wednesday — all at the Bellevue Stratford Hotel. (No sessions on Thursday.)

ON THE LIGHTER SIDE . . . .

SUNDAY — 3 p.m., Welcome coffee hour, Clover and Red Rooms, Bellevue Stratford; 8:30, movies, Crystal Room, Bellevue Stratford. MONDAY — 9:30 a.m., Bus tour for ladies; 12:15 p.m., Welcome luncheon, Ballroom, Bellevue Stratford; 2 p.m., Bus tour for ladies; 7:30 p.m., Get-together party (social hour, buffet dinner, dancing), Grand Ballroom at the Sheraton. TUESDAY — 10 a.m., Bus tour for ladies and luncheon at Madison Room, Presidential Apartments; 12:15 p.m., ASHAE life members' luncheon; 5:30 p.m., Social hour and dinner for University of Illinois engineering alumni and friends, Red and Green Rooms, Bellevue Stratford. WEDNESDAY — 12:30 p.m., Luncheon for ladies and fashion show, Warwick Hotel; 6 p.m., Social hour, Clover Room, Bellevue Stratford; 7:15 p.m., ASHAE annual banquet in Ballroom of Bellevue Stratford, followed by dancing in Rose Garden. THURSDAY — 10 a.m., Coffee hour, Clover Room, Bellevue Stratford.

PROGRAM for the ASHAE MEETING

(All meetings and events at Bellevue Stratford unless indicated otherwise)

● Saturday — January 24

2:00 p.m. Research Executive, E. F. Snyder, Jr., *Chairman*

● Sunday — January 25

10:00 a.m. Registration

10:00 a.m. **Council Meeting**

10:00 a.m. Committee on Research, E. F. Snyder, Jr., *Chairman*

3:00 p.m. Welcome-Pennsylvania Dutch Koffee Klatch (*Clover & Red Room*)

8:30 p.m. Movies (*Crystal Room*)

● Monday — January 26

9:00 a.m. Registration

9:00 a.m. First Session

Call to Order — Pres. E. R. Queer

Topical Session on Comfort

Charles S. Leopold, *Moderator*

Researches on Heating and Ventilation in Relation to Human Comfort, by Thomas Bedford

Metabolic Patterns in Stressful Environments, by Nello Pace, M.D.

Environment Reactions in the 80 to 105 F Zone, by B. H. Jennings and Baruch Givoni

9:30 a.m. Ladies' Bus Tour of Old Philadelphia

Buses leave from — Sheraton, Warwick, Bellevue Stratford and Benjamin Franklin

12:00 noon Exposition (Closes at 10:00 p.m.)

12:15 p.m. Welcome Luncheon (*Ballroom*)

Toastmaster: E. K. Wagner, *General Chairman*

Invocation: P. H. Yeomans

Speaker: Hon. Richardson Dilworth, *Mayor of Philadelphia*

2:00 p.m. TAC Meetings: Air Cleaning; Air Distribution; Heat Transfer through Fenestration; Hot Water and Steam Heating; and Odors

2:00 p.m. Ladies' Bus Tour of Old Philadelphia

Buses leave from — Sheraton, Warwick, Bellevue Stratford and Benjamin Franklin

7:30 p.m. Get-Together Party (*Grand Ballroom-Sheraton Hotel*)

Social Hour — Buffet Dinner — Entertainment

Dancing — Howard Lanin — Orchestra

● Tuesday — January 27

9:00 a.m. Registration

9:30 a.m. Second Session

Call to Order — Ist Vice Pres. A. J. Hess

Supply Outlet Locations for Basement Heating, by J. R. Wright and D. R. Bahnfleth

Pulsations in Single-Port Gas-Fired Residential Heating Equipment, by C. F. Speich and A. A. Putnam

Low Frequency Combustion Noise in Oil-Burning Equipment, by G. J. Sanders and W. E. Lawrie

Omni-Directional Low-Speed Hot-Wire Anemometer, by J. F. Kemp (by title only)

9:30 a.m. Third Session

Call to Order — 2nd Vice Pres. Walter A. Grant

Symposium on Hydronics

P. N. Vinther, *Moderator*

Design of Water Piping Systems, by B. L. Sturdevant

Noise and Vibration in Water Piping Systems, by W. L. Rogers

Selection of Pumping Equipment, by G. F. Carlson

Refrigerant Piping, by J. R. Chamberlain

10:00 a.m. Ladies' Bus Tour of Historical Mansions

Luncheon (*Madison Room, Presidential Apartments*)

Buses leave from — Sheraton, Warwick, Bellevue Stratford and Benjamin Franklin

12:00 noon Exposition (Closes at 10:00 p.m.)

12:15 p.m. Life Members' Luncheon

2:00 p.m. TAC Meetings: Heat Pump; Heating and Air Conditioning Loads; Insulation; Physiological Research and Human Comfort; Sound and Vibration Control; and Thermal Circuits

7:00 p.m. Past Presidents' Dinner

7:30 p.m. TAC Meetings: Combustion; Control; Industrial Environment; Solar Energy Utilization; Sorption; and Weather Data

● Wednesday — January 28

9:00 a.m. Registration

9:30 a.m. Fourth Session

Call to Order — Treas. J. H. Fox

Frost Formation and Heat Transfer on a Cylinder Surface in Humid Air Cross Flow, Parts I and II, by P. M. Chung and A. B. Algren

Downward Heat Transfer Through a Joist Space, by P. M. Chung and C. E. Lund (by title only)

Annual Energy Use for Electric Space Heating, by R. L. Boyd

Heating by Hypocaust, by E. Daisley Thatcher

9:30 a.m. Fifth Session

Call to Order — Pres. E. R. Queer

Symposium on Heat Pump Performance

G. B. Priester, *Moderator*

Performance of Water Source Heat Pump for Office Building in Southwest, by F. L. McFadden, Jr.

Performance of Water Source Heat Pump for Office Building in Northwest, by J. Donald Kroeker

Performance of Package Air Source Heat Pump Units, by W. A. Spofford

Operation of Large Air Source Central Heat Pump Systems, by E. R. Ambrose

12:00 noon Exposition (Closes at 10:00 p.m.)

12:30 p.m. Ladies' Luncheon and Fashion Show by John Wanamaker (*Ballroom — Warwick Hotel*)

2:00 p.m. Sixth Session

Call to Order — 1st Vice Pres. A. J. Hess

Probe for Thermal Conductivity Measurement of Dry and Moist Materials, by W. Woodside

Heat Gain through Windows Shaded by Metal Awnings, by Necati Ozisik and L. F. Schutrum

A New Method for Calculating Radiant Exchanges by Benjamin Gebhart

2:00 p.m. Seventh Session

Call to Order — Pres. E. R. Queer

Symposium on Corrosion and Water Treatment

W. G. Hole, *Moderator*

Water Treatment to Inhibit Corrosion, by F. Hodgdon

Thermo Insulation and Corrosion, By C. E. Ernst

Hot Water and Anti-Freeze Systems, by L. D. Polderman

Taking the Mystery out of Water Treatment, by Mrs. Olivia Burkey

Specification Problems in Water Treatment, by W. L. Andrews

6:00 p.m. Social Hour (*Clover Room*)

7:15 p.m. 65th Annual Banquet (*Ballroom*)

Toastmaster: Albert J. Nesbitt

Invocation: Rev. Lewis T. Briner, Calvary Presbyterian Church, Wyncote, Pa.

Speaker: Eric A. Walker, president, The Pennsylvania State University

Introduction and Installation of 1959 Officers

Presentations

Dancing (*Rose Garden, 18th Floor*) from 10:00 p.m.

Howard Lanin — Orchestra

● Thursday — January 29

9:30 a.m. Organization Meeting of 1959 Committee on Research

10:00 a.m. Organization Meeting of 1959 Council

10:00 a.m. **Auf Wiedersehen Coffee Hour** (*Clover Room*)

12:00 noon **Exposition (Closes at 10:00 p.m.)**

EXPOSITION EXHIBITORS AND THEIR EXHIBITS

HERE ARE THE names of the exhibitors who are scheduled for the 14th International Heating & Air-Conditioning Exposition, per latest advice at press time from the exposition management.

Those listed with information on the products they will exhibit and the names of representatives who will be in attendance furnished these details direct to the publisher. With the booth numbers and the accompanying diagrams of the exhibit hall, which are published here, each exhibitor is easily located.

The exposition is under the management of the International Exposition Co., E. K. Stevens, manager.

ACME ENGINEERING & MFG. CORP., P. O. Box 1203, Muskogee, Okla. — Booth C-34

In attendance: Curt Buddrus, Edward Buddrus, Norman Augsburger, James Calhoun.

Exhibiting: Supply and exhaust power roof ventilators (belt drive); belt driven propeller fans; new line of tube axial fans; new line of low and moderate pressure direct drive propeller fans; new line of low silhouette spun hood power roof ventilators; automatic shutters for wall, ceiling or drop-in applications. The low silhouette power roof ventilators up to 42 in. size (supply and exhaust type), the direct drive propeller fans for low and moderate pressures, and the new tube axial fans will be featured.

ACME INDUSTRIES, INC., 600 N. Mechanic St., Jackson, Mich. — Booth 508

In attendance: K. A. Weatherwax, P. A. Weatherwax, E. B. Dunphy, W. M. Hassenplug, F. M. Reed, R. C. Robertson, D. G. Merrill, L. R. Smith, W. C. Rehor, W. K. Parks, T. W. McGuire, H. W. Smith, J. F. Calvin, R. J. Harris, H. J. Rust, B. M. Menden, R. L. Bishop, K. E. Ultsch, M. A. Sheffler, Harold Margulis.

Exhibiting: Packaged liquid chillers, packaged water chillers, cooling towers, evaporative condensers, air cooled condensers, finned coils, remote room conditioners, central station air handlers, commercial self-contained packaged air conditioners, industrial self-contained packaged air conditioners. Display will be first public showing of new lines of packaged water chillers, air cooled condensers, finned coils, remote room conditioners, air handlers, and commercial and industrial self-contained packaged air conditioners.

ACME MFG. CO., 7500 State Rd., Philadelphia 36, Pa. — Booth 409

In attendance: Gene Feiner, B. D. Waller, T. A. McGinley, John McShane, D. H. Ruff, K. Balsham, M. Wexler, N. Cohn, H. Cohn, Fred Bottiger, Wally Hirsch, Charles McKenna, Sam Baker, Jack D. Olshen, Hal Goodwin.

Exhibiting: Pipe, duct and fittings for heating and cooling systems.

ADDISON PRODUCTS CO., Addison, Mich. — Booth 921

In attendance: V. C. Knight, H. L. Ruliffson, S. E. Vickers, W. W. Hull, L. G. Underhill, T. H. Smoot, R. E. Dyas.

Exhibiting: Residential central air conditioning, heat pump, dehumidifiers, window air conditioners, refrigeration units for beverage coolers.

ADELTA MFG. CO., INC., 21st & Ellsworth Sts., Philadelphia 46, Pa. — Booth S-22

In attendance: Jim Corbman, Martin Corbman, Robert Corbman, Martin Posner, Angelo Fasulo, Ray Westlund, William Webster, Sidney Schwartz.

Exhibiting: Standardized pipe, duct and fittings for residential heating and cooling installations. Ten-foot lengths of round pipe, snap-lock trunk duct and wall stack, and long lengths of trunk duct and wall stack will be featured.

AEROFIN CORP., 101 Greenway Ave., Syracuse 3, N. Y. — Booth S-68

In attendance: L. A. Childs.

Exhibiting: Typical finned tube samples and typical water cooling, direct expansion, and heating coils.

AEROQUIP CORP., 300 S. East, Jackson, Mich. — Booth 625

In attendance: M. Brandau, D. Fox, V. Emery.

Exhibiting: Refrigerant self-sealing couplings, flexible refrigerant hose with detachable re-usable fittings.

AERO SUPPLY MFG. CO. — see L. J. WING MFG. CO.

AIR CONDITIONING EQUIPMENT CORP., 219 E. 44th St., New York 17, N. Y. — Booth C-59

In attendance: Kenneth S. Davidson, Peter Flack, W. L. Gabbert, John B. Hewett, Joseph Errico, Wm. Kingswell, R. T. Mitchell.

Exhibiting: "Pollux" Btu meter for hot and chilled water, gas density recorder.

AIR CONDITIONING, HEATING AND VENTILATING, 93 Worth St., New York 13, N. Y. — Booths 415, 417, 419

Exhibiting: Publication.

AIR CONDITIONING & REFRIGERATION NEWS, 450 W. Fort St., Detroit, Mich. — Booth 4

Exhibiting: Publication.

AIR-CON FILTER CORP., 626 National St., Memphis, Tenn. — Booth S-95

AIR CONTROL PRODUCTS, INC., Coopersville, Mich. — Booth 56

In attendance: R. L. Leigh, K. L. Babcock, H. C. Galleher, Robert S. Clapp, T. E. Boylan, W. L. St. John, L. J. Rakosky, J. K. Lewis, G. A. Arehart.

Exhibiting: Line of registers, grilles and diffusers for warm air heating and summer air conditioning. New multi-louver registers and grilles and new "Economy" floor diffusers will be featured.

AIR CONTROLS, INC., (DIV. THE CLEVELAND HEATER CO.), 2310 Superior Ave., Cleveland 14, Ohio — Booth C-44

In attendance: B. G. Krause, Arthur E. Friedman, Robert Larkin, James George, Frank Shaffer, N. Busch, S. S. Minnich.

Exhibiting: Air conditioning blowers, blower filter units, window fans, attic fans, direct drive blowers.

AIR DEVICES, INC., 185 Madison Ave., New York 16, N. Y. — Booths 533, 535

In attendance: Herbert Kunen, James O'Day, Rod MacLean, William Fembleaux, P. G. Daves, T. A. Hughes, Richard Altwater.

Exhibiting: "Agitair" air diffusers, registers and grilles, air and grease filters, exhausters, "Thermotank" high velocity mixing boxes, punkah louvres. Square and rectangular diffusers with matching return and exhaust units, "Perfair" series of square and rectangular diffusers with perforated face to simulate tile ceilings with matching return and exhaust units, and high velocity mixing boxes with "Con-Vol" device which utilizes regulators and standard pneumatic motors mounted on a sliding base will be featured.

AIR DISTRIBUTION PRODUCTS, 116 S. LaBrea Ave., Los Angeles 36, Calif. — Booth 447

AIR DOOR INC., DIV. OF NEW CASTLE PRODUCTS, INC., New Castle, Ind. — Booth 439

In attendance: R. H. McConville, E. J. Kurek, D. E. Baldock, M. D. Pigg, J. Waddell, D. Fritz.

Exhibiting: Air moving and heating equipment to deliver "an insulating wall of air" across an opening.

AIRFLOOR CO. OF CALIFORNIA, INC., and VALVEBLOWER CO. OF CALIFORNIA, INC., 13729 E. Rosecrans Ave., Santa Fe Springs, Calif. — Booth 643

In attendance: John C. Leemhuis, Jr., Louis J. Leemhuis, E. Calvin Duke, Jr.

Exhibiting: Metal stampings designed to create hollow concrete floors for specific use in warm air radiant heating and cooling systems; "Praetorian" unit ventilator.

AIR-GUIDE PLASTICS CORP., 7929 N. E. First Ave., Miami 38, Fla. — Booth S-48

AIR-MAZE CORP., 25000 Miles Rd., Cleveland 28, Ohio — Booth C-16

In attendance: W. B. Watterson, J. M. Clem, A. P. Dovala, M. Dow, J. Crowley.

Exhibiting: Air filter panels, high velocity electronic air cleaner.

AIR & REFRIGERATION CORP., 439 Madison Ave., New York 22, N. Y. — Booth 29

In attendance: Walter L. Fleisher, Daniel C. Lindsay, J. H. Burges, R. W. Burges, H. S. Dutcher, R. W. Gaines, U. A. Bertolami.

Exhibiting: Factory insulated panels; 100,000 cfm articulated unit.

AIRSERCO MFG. CO., INC., 435 Melwood St., Pittsburgh 13, Pa. — Booth S-93

AIRTEMP DIV., CHRYSLER CORP., Dayton 1, Ohio — Booth 1082

AIRTEX CORP., 2900 N. Western Ave., Chicago 18, Ill. — Booth C-109

In attendance: Ed Harrison, William McDeavitt, Joseph Moyer, William Moyer, Arno R. Myers, Parker Thorne.

Exhibiting: Radiant acoustical ceiling combining in one unit radiant panel heating, panel cooling, acoustical treatment, thermal insulation and a finished accessible ceiling.

ALCO VALVE CO., 865 Kingsland Ave., St. Louis 5, Mo. — Booth 434

In attendance: John E. Dube, George J. Boepple, John A. Schenk, Richard Willner, A. L. Baker, Jack Franklin, J. W. Parrott, C. Wachholtz, R. N. Meyer, V. V. Solomon, J. J. Cassaday, T. J. Phillips, E. Lodwig, H. A. C. Smith, R. E. Spence.

Exhibiting: Thermo expansion valves, refrigerant distributors, solenoid valves, pressure regulators, new reversing valves for heat pump and hot gas defrost. New line of reversing valves for heat pump and hot gas defrost, and pilot operated expansion valves for chiller applications, will be featured.

ALDRICH CO., Wyoming, Ill. — Booths 433, 435

In attendance: N. Howard, B. Mulder, P. M. Stephenson.

Exhibiting: "Heat-Pak" low pressure steel ASME boiler-burner units for heating and hot water supply (oil fired and gas fired), high pressure gun type conversion oil burners.

ALLEN-BRADLEY CO., Milwaukee 4, Wisc. — Booth 214

ALLIED CHEMICAL CORP. — see GENERAL CHEMICAL DIV.

ALLIED THERMAL CORP., TUTTLE & BAILEY DIV., New Britain, Conn. — Booth C-15

ALLIS-CHALMERS MFG. CO., Milwaukee, Wisc. — Booth 1108

Exhibiting: General purpose pump; integral and fractional air conditioning pumps; "Super-Seal" motors and other super-insulated motors; sleeve bearing motors; dry type transformers; new "Adjustex" V-belt sheave and "Til-Tex" reaction torque motor base. "Adjustex" sheave and "Til-Tex" motor base will be featured.

ALLIS CO., THE LOUIS, 427 E. Stewart St., Milwaukee 1, Wisc. — Booth 917

In attendance: B. A. Flatley, R. E. Kurkjian, F. G. Luber, J. C. Goodale, W. E. Barta, P. M. Connell, M. J. Biety, C. O. Abrahamson, B. E. Bogue, R. O. Brown, A. W. Harrington, R. T. Campbell, J. Ayres, D. A. Dillon.

Exhibiting: Pancake motor, "Air-Over" motor, "Syncro-Spede" motor, hermetic motors, insulation board.

AMERICAN AIR FILTER CO., INC., 215 Central Ave., Louisville 8, Ky. — Booths 103, 109, 111, 113, 117

In attendance: W. G. Frank, Arthur Nutting, D. J. Gonzalez, H. J. Noles, C. D. Wright, A. T. Miller, R. V. Matkin, Roger Pate, C. M. Anderson, I. V. Clark, F. T. Carroll, J. R. Kayse, F. E. O'Callaghan, R. E. Haskins, C. A. Pickett, R. W. Smith, J. W. O'Neil, Robert D. Moore, J. W. Frazier, F. Robert Walker, Dale Barnstable, Earl M. Evans, R. W. Whyte, R. F. Logsdon, Stig Sylvan, C. S. Stock, D. D. Briggs, J. W. May, J. L. Kline, Bert Lawson, J. J. Willis, Sam Kennard, Clyde Langenbeck, C. J. Gaspar, F. K. Platt, W. G. Hole, Howard Fitch, E. C. Arenz, J. F. Fish.

Exhibiting: High velocity electronic precipitator, automatic renewable media filter, new "Rollotron" air filter, aluminum unit filters, high efficiency filters, plastic "PL-24", high velocity "Electro-Cell" precipitator, disposable air filters, electronic air filters, charged media filter cells (disposable), air conditioning unit ventilators (for schools), package liquid chiller, double duct high pressure air conditioning multi-zone unit, heating and ventilating unit with "Roll-O-Vent" filter section, non-freeze steam coils, standard steam coils, D.E. air conditioning coils, hot water-chilled water coils, unit blower, vertical unit heater, horizontal unit heater, console heater, centrifugal fans, float and thermostatic steam traps, thermostatic traps, medium and high pressure steam traps, motorized control valve (steam), heating control system, radiator valves, activated carbon odor filter. New "Rollotron" air filter, new "Roll-O-Matic", activated carbon filter, aluminum unit filter, plastic "PL-24", high velocity "Electro-Cell" precipitator, package liquid chiller, double duct air conditioning multi-zone unit, and D.E. coils will be featured.

AMERICAN ARTISAN, 6 N. Michigan Ave., Chicago 2, Ill. — Booth 709

In attendance: Chas. E. Price, Wallace J. Osborn, Robert A. Jack, C. M. Burnam, Jr., James D. Thomas, George C. Cutler, Thomas V. Johnson, Clyde Barnes, Robert J. Osborn, Tom Hughes, Donald T. Brickner, Richard G. Osborn.

Exhibiting: "American Artisan" — The Magazine of Central Residential Air Conditioning, Warm Air Heating, and Sheet Metal Contracting; reprint books; market data: "Air Conditioning Newsletter."

AMERICAN BLOWER DIV. OF AMERICAN-STANDARD, Detroit 32, Mich. — Booths 44, 46, 48

Exhibiting: Refrigeration machine, multizone air conditioner, inductor type air conditioner, packaged air conditioner, centrifugal and propeller fans, "Gyrol" fluid drive, furnace fans, unit heaters, power roof ventilator.

AMERICAN COOLAIR CORP., 3604 Mayflower St., (Box 2300), Jacksonville 3, Fla. — Booth C-39

In attendance: Ned A. Patton, Harry M. Graves, Wallace Allen, Jr., Kurt Sprengling.

Exhibiting: Exhaust fans, power roof ventilators, wall shutters, attic fans. Power roof ventilator will be featured.

AMERICAN FURNACE CO., 1300 Hampton Ave., St. Louis 10, Mo. — Booth C-21

In attendance: R. L. Archibald, R. A. Cromwell, Howard Clawson, Walter Weiss, J. S. Schlank.

Exhibiting: "Afco" warm air heating units and "Afco-Comfortmaker" cooling units. New "Oil Master" furnaces and new builders' model "Comfortmaker" packaged cooling unit will be featured.

AMERICAN GILSONITE CO., 134 W. Broadway, Salt Lake City 1, Utah — Booth 805

AMERICAN IRON AND STEEL INSTITUTE — see COMMITTEE ON STEEL PIPE RESEARCH

AMERICAN MACHINE AND METALS, INC. — see DeBOTHEZAT FANS DIV.

AMERICAN METAL PRODUCTS CO. — see AMERIVENT DIV.

AMERICAN SOCIETY OF HEATING AND AIR-CONDITIONING ENGINEERS, 62 Worth St., New York 13, N. Y. — Booth 1018

In attendance: ASHAE headquarters—A. V. Hutchinson, C. F. Flink, C. H. B. Hotchkiss, W. M. Vidulich, F. W. Hofmann, C. W. MacPhee, Ralph F. Duysters. Research Laboratory—R. G. Huebscher, W. F. Kerka, J. E. Loucks, Necati Ozisik, L. F. Schutrum. Philadelphia chapter — C. J. Lubking, T. L. Arnold, V. R. Bitzer, I. G. Brennan, Warren Brewer, C. F. Dietz, H. W. Doerrfuss, C. J. Kern, H. K. King, A. E. Kriebel, J. F. Lowrey, H. T. Makin, Jr., H. H. Mohrfeld, C. A. Rhea, H. N. Teuber.

Exhibiting: The society will have a "live" demonstration of solar heat gain through shaded and unshaded windows illustrating work accomplished at the research laboratory. Other society activities will also be displayed.

AMERICAN-STANDARD, AIR CONDITIONING DIV., 40 W. 40th St., New York 18, N.Y. — Booth 69

In attendance: William Sullivan, E. D. Wright, Andrew Couch

Exhibiting: Winter, summer and year 'round residential and light commercial air conditioning equipment. New line of evaporator-condensers and "Balanced Heat" with area control winter air conditioning will be featured.

AMERICAN-STANDARD, KEWANEE BOILER DIV., 101 Franklin St., Kewanee, Ill. — Booths 63, 65, 67

In attendance: L. W. Charlet, C. R. Dougherty, E. E. Druin, C. K. Ferguson, R. E. Ferry, J. B. Finnegan, J. A. Hallinan, W. I. Hamilton, A. L. Hare, E. W. Irwin, W. R. Ivey, C. L. Johnson, Jr., E. J. Lambrecht, T. F. Maher, R. B. Mason, H. W. McClure, P. A. Mutchler, E. M. Palmer, D. W. Stoner, R. E. Sjoberg, R. E. Wicklander, J. A. Willets, G. C. Zang.

Exhibiting: New 52 to 651 hp commercial Scotch package units; 18 to 92 hp "Scottie, Jr." package units; "Square-Heat" forced draft package units; "Job-Built" boilers.

AMERICAN-STANDARD PLUMBING AND HEATING DIV., 40 W. 40th St., New York 18, N. Y. — Booths 62, 64, 66, 68

AMERICAN-STANDARD — also see AMERICAN BLOWER DIV. and DETROIT CONTROLS DIV.

AMERICAN WARMING & VENTILATING CO., THE, 1017 Summit St., Toledo 4, Ohio — Booth 45

In attendance: James E. Johnson, William P. DeHan.

Exhibiting: Extruded and fabricated louvres, dampers, diffusers, shutters, penthouses, roof vents. Extruded aluminum louvres will be featured.

AMERIVENT DIV., AMERICAN METAL PRODUCTS CO., INC., 6100 Bandini Blvd., Los Angeles 22, Calif.— Booth C-115

In attendance: S. R. Rubin, A. M. Rubin, R. E. Hewitt, B. L. Clarke.

Exhibiting: Double wall gas vent pipe and fittings for gas fired water heaters, boilers, furnaces, space and wall heaters. New adjustable L offset fitting will be featured. In addition, visitors will compete against time in assembling a miniature gas vent installation.

AMMERMAN CO., INC., 110 N. Second St., Minneapolis 1, Minn. — Booth C-13

In attendance: C. L. Ammerman, E. A. Ammerman, T. L. Ammerman, Sam Lange.

Exhibiting: "Airxpeler" and "Airmpeler" ventilators and skylights. "Airxpeler Swing O Way" exhausters and "Airxpeler" skylights made of fiber glass will be featured.

ANDERSON CO., THE V. D., DIV. OF INTERNATIONAL BASIC ECONOMY CORP., 1935 W. 96th St., Cleveland 2, Ohio — Booth 616

In attendance: M. L. Waldron, K. L. Swartz, Wm. J. Gleason, Jr.

Exhibiting: Steam traps — inverted bucket, combination, thermostatic, and float; pipe line strainers; air release valves; steam and air purifiers; steam and air separators.

ANEMOSTAT CORP. OF AMERICA, 10 E. 39th St., New York 16, N. Y. — Booth 602

In attendance: Air-Care Ltd.; Augur, Jones & Green; George F. Bertrand Co.; A. R. Bowman Co.; C. H. Burnap Co.; Climart, S. A.; C. A. Tecnomat; Carns-Hoaglund Sales Co.; Walter Cooke; Control & Metering Ltd.; E. J. Deckman Co.; Engineering Products Co.; Engineering Sales Co.; Eyster Engineering Co.; F. R. Foote Co., Inc.; Freemire & Assoc., Inc.; Ed. Gifford & Co.; Gilbert Engineering Co.; Ray R. Goodwin Co.; H. D. Grant Co.; Hess, Greiner & Polland; John B. Hewett Co., Inc.; S. E. Fenstermcker; George A. Israel, Jr.; E. H. Langdon Co.; Manufacturers' Sales Co.; R. F. McAndrews Co.; George Q. McNamara Co.;

James MacG. Means; J. A. Hagan, Jr. & Co.; T. J. O'Brien Engineering Co.; O'Connor-Oklahoma Co., Inc.; J. M. O'Connor, Inc., Ogle Engineering Sales; L. S. Pawkett & Co.; Duane D. Pearsall Co.; Sanders & Hollander; Snook & Aderton, Inc.; J. W. Stevens Co.; Stipp & Powell, Inc.; John F. Templeton Co.; Thermal Co., Inc.; Thermal Products Co.; Vernon S. Tupper Co.; A. E. Wallgren; George R. Walz; Williams, Gritton & Wilde; Zintel-Devitt Co.

Exhibiting: Air diffusers, "Anemotherm" air meter, high velocity units, school units, turbulators, "Waterloo" registers and grilles.

ANSUL CHEMICAL CO., Marinette, Wisc. — Booth C-19

ARKLA AIR CONDITIONING CORP., Shannon Bldg., 812 Main St., Little Rock, Ark. — Booth C-113

In attendance: Bob Eskew, W. G. Wepfer, R. M. Wilson, Bob Spear.

Exhibiting: "Sun Valley" unit, remote unit, direct fired and "steam fired" 25 ton water chillers, "Reynolds" regulator, automatic "Gaslite", Remote "Sun Valley" hot and cold water unit, and 25 ton direct fired water chiller, will be featured.

ARKLON MFG. CO., P. O. Box 3501, Cleveland 18, Ohio — Booth 73

In attendance: Philip Borkat, W. H. Wiggins, O. W. Dobson, F. J. Butler, C. J. Davis, T. S. House, R. H. Pentecost, C. C. Clark, R. Ozer.

Exhibiting: "Bon-Air" atomizing furnace humidifier.

ARMCO STEEL CORP., Middletown, Ohio — Booth 22

ARMSTRONG CORK CO., Lancaster, Pa. — Booths 425, 427

In attendance: F. S. Donnelly, Jr., L. P. Chubet, Frank Farrell, J. T. O'Hara

Exhibiting: "Armalite" foamed polystyrene low temperature insulation board; "S. E. Armalite" — self-extinguishing form of "Armalite"; "Armaflex" flexible foamed plastic pipe covering insulation; cork board; various sundries. Focal point of display will be a demonstration table in which visitors can try their hand at fabricating parts from "Armaflex."

ARMSTRONG FURNACE CO., DIV. OF NATIONAL UNION ELECTRIC CORP., 851 W. Third Ave., Columbus 8, Ohio. — Booths 1, 3

In attendance: W. J. Olsen, George Zimbelman, Ed Clifford, C. L. Brooks, P. Y. Matthews, J. R. Irwin, Dan J. Calori.

Exhibiting: Oil and gas fired furnaces — basement, lo-hi-boy, counterflow and horizontal flow models; oil and gas burners; central air cooled air conditioners, 2 and 3 ton capacities. New counterflow furnace design for both gas and oil firing will be featured.

ARMSTRONG MACHINE WORKS, 874 Maple St., Three Rivers, Mich. — Booth 610

In attendance: Chuck Daugherty, Jim Croce, Vic. Rainsford, Tom Campbell.

Exhibiting: Open float and thermostatic traps, steam traps, air traps, pipe line strainers, industrial and domestic humidifiers, zone valves for hot water heating systems. The zone valves for individual room temperature control in motels, schools, homes, etc., and "Humid-i-maker" for small industrial and/or domestic humidification will be featured.

ARNO ADHESIVE TAPES, INC., U. S. 20 at Ohio St., Michigan City, Ind. — Booth S-12

In attendance: Joseph W. Scholl, Thomas P. Riley

Exhibiting: Duct sealing tapes, "Ductapes".

ARROW-HART & HEGEMAN ELECTRIC CO., THE, 103 Hawthorn St., Hartford 6, Conn. — Booth C-41

ASCOT GAS WATER HEATERS, LTD., 1300 W. Ninth St., Cleveland 13, Ohio. — Booth S-94

ASSOCIATED MILLS, INC., 303 W. Monroe St., Chicago 6, Ill. — Booth C-51

In attendance: R. J. Stern

Exhibiting: "PollenEx Pure Air" permanent type furnace filter.

ATLANTIC PIPEBENDING & FABRICATING CORP., Moonachie Ave., Moonachie, N. J. —Booth 741

In attendance: Samuel H. Nitzberg, Paul Bolcik, Richard Cowling

Exhibiting: No products, but consultation on radiant heating and other types of pipe fabrication.

AUER REGISTER CO., THE, 6600 Clement Ave., Cleveland 5, Ohio—Booth 407

In attendance: Charles Smith, H. F. Curtis, A. H. Bechtel, E. F. Steffner, E. H. Ruppert.

Exhibiting: Line of registers and grilles for residential and commercial heating and air conditioning.

AU-TEMP-CO CORP., DIV. OF HEAT-TIMER CORP., 657 Broadway, New York 12, N. Y. —Booth 609

AUTO-FLO CORP., 12085 Dixie, Detroit 39, Mich.—Booth 5

In attendance: Milton Perlman, Joseph Perlman, Lee Ruttenberg, Martin Lipton, Leonard Woldoff, Donald B. Sutherland, Donald Mullen, James Miner, Harold Burke, Bob Matzen, Vic Vogel, Herbert C. Hoover, Joseph Vogel, E. N. Tipton, Bernard L. Rushton, Ben D. Waller, P. J. Halter, Howard A. Weller, Dean P. Rethmeier, Harold E. Goodwin, Alexander P. McCall, Sam Baker, R. W. Webster, E. J. Towle, Charles Yengest.

Exhibiting: Automatic humidifier, "Fairway" humidifier, oil filters, replacement cartridges, evaporator plates. "Fairway" humidifier and universal evaporator plates will be featured.

AUTOMATIC DEVICES CO., INC., 714 Hillgrove Ave., Western Springs, Ill.—Booth 731

In attendance: Henry T. Kucera, Martin Heffler, Hervey A. MacVicar, J. J. McAdams, Robert E. Harman, Thos. F. Burke

Exhibiting: Line of outdoor and indoor-outdoor type space heating controls. New temperature reset sequence switch and new indoor-outdoor modulating type controllers for warm air and hot water heating systems will be featured.

AVCO MFG. CORP., LYCOMING DIV.—see SPENCER HEATER

BACHARACH INDUSTRIAL INSTRUMENT CO., 200 N. Braddock Ave., Pittsburgh 8, Pa.—Booth 628

In attendance: Rudolf Ulrich, J. A. Stein, John W. Smith, J. V. Palmer.

Exhibiting: "Fyrite" combustion testing kits, "Tempscribe" temperature and operation recorders, "Florite" and "Floret" air velocity meters, "Monoxor" for carbon monoxide detection, gas pressure manometers, "Tempoint" air circulation thermometer, filter gages to signal when filters in heating and air conditioning systems need to be changed. Air filter service switch, two pen temperature and operation recorder, and air velocity indicator will be featured.

BAKER, INC., C. I., Colorado Ave., Lorain, Ohio—Booth S-15

BALTIMORE AIRCOIL CO., INC., P. O. Box 7322, Baltimore 27, Md.—Booth 1069

In attendance: John Engalitcheff, Jr., Raymond Forseille, William Kahlert, Hugh Shepard, James Honeywell, George Klein, Carl Schroeder, Donald Geiser, Thomas Facius, Joseph Meade, Kenneth Watson, Earl Woody.

Exhibiting: "Flexi-Tower" cooling tower with adjustable capacity, models of other blow-through and draw-through evaporative condensers and cooling towers. Units are factory-assembled, all-steel hot-dip galvanized sectional construction.

BARBER-COLMAN CO., 1300 Rock St., Rockford, Ill.—Booths 118, 122

In attendance: E. A. Greenlee, C. P. Yates, Pete Van Dae, and others.

Exhibiting: Packaged unit ventilator controls; modular electronic control panels; electronic control centers; transistor motor operators; constant volume, double duct mixing box; self contained volume regulator; expanding cone dampers. Transistor motor operator (fully transistorized electronic control); modular electronic control panels (building blocks of an electronic air conditioning control system); constant volume, double duct mixing box designed for high velocity, double duct applications (has self contained volume regulator to maintain the cfm discharge from the box to within plus or minus 5 percent of the setting) will be featured.

BARBER MFG. CO., THE, GAS AND OIL BURNER DIV., 1052 E. 134th St., Cleveland 10, Ohio—Booth C-150

BARKE PRODUCTS, INC., 501 Vineland Rd., Bay Village, Ohio—Booth C-55

In attendance: Vince Goodpaster, Nick Kuzmick, Merl Hanke

Exhibiting: Stamped steel pulleys, zinc plated spoke and solid, V-belts.

BARNEBEY-CHENEY, Cassady at 8th Ave., Columbus 19, Ohio—Booth 15

In attendance: R. L. Trout, H. L. Barnebey, Harold Pontius, J. B. Witwer.

Exhibiting: Activated charcoal air purification equipment; heavy duty filters; light duty disposable filters; self contained unit type purifiers. Newly designed wall unit activated charcoal air purifier for flush mounting in kitchens, lavatories, recreation rooms and offices will be introduced.

BARRY BLOWER CO., 3100 California St., N.E., Minneapolis, Minn.—Booth 305

In attendance: Herman Freidson, L. P. Hanson

Exhibiting: Belted ventilating set, ventilating fans, industrial steel plate exhauster, fan wheels and housings. New designs of ventilation fans will be featured.

BASO INC., 730 N. Jackson St., Milwaukee 1, Wisc.—Booth 232

In attendance: J. H. Thornbery, S. L. Kile, P. A. DeLeon, L. W. Bowerman, A. M. O'Quinn, F. W. Doster, S. J. Carlisi, J. X. Tinsley, R. C. Jones, V. C. Kitzrow, E. O. Abel, J. H. Muth.

Exhibiting: Automatic pilots, automatic pilot valves and switches. Self energized appliance control systems will be featured.

BASTIAN-MORLEY CO., INC., 200 Truesdell Ave., LaPorte, Ind.—Booth 626

In attendance: H. B. Carbon, J. P. Hutchinson, John Zylstra, H. J. Morley, C. F. Carney, C. E. Forest, J. W. Scull, Gene F. Carney, R. E. Reynolds.

Exhibiting: "Basmor" boiler, new water heater, new smokeless and odorless incinerator, new "Seal'd-Vent" gas fired wall heater.

BAYLEY BLOWER CO., 1817 S. 66th St., Milwaukee 14, Wisc.—Booth 621

In attendance: Frank Wuerl, Frank J. Hamilton, Burnett M. Kluge, George E. Szekely.

Exhibiting: Centrifugal fans, air washers, blast coils. New backward-inclined bladed fan will be featured.

BELL & GOSSETT CO., 8200 N. Austin Ave., Morton Grove, Ill.—Booths 134, 136

In attendance: E. J. Gossett, R. E. Moore, C. E. Pullum, W. A. Boone, R. A. Patterson, A. B. Meeg, H. R. Henke, E. Ford, H. Lockhart, M. Hofmeister, C. Towns, J. A. Ivester, and others of exhibitor's sales personnel.

Exhibiting: "B&G" package liquid coolers, refrigeration compressors, boosters and universal pumps, "Hydro-Flo" heating and cooling specialties. Several new products will be on display, including new line of refrigeration compressors, two, four, six and eight cylinder models being shown. Also featured will be a full size "Hydronic" system in operation.

BENDIX-WESTINGHOUSE AUTOMOTIVE AIR BRAKE CO., 950 E. Virginia St., Evansville 11, Ind.—Booth C-58

In attendance: John R. Morrill, Donald J. Wood, Clyde E. Ploeger, John W. Downen, Henry C. Preher, Ralph W. Bond.

Exhibiting: Hermetic motor compressors and condensing units for air conditioning and commercial applications.

BERGER FURNACE DIV.—see BURNHAM CORP.

B-I-F INDUSTRIES, INC., 345 Harris Ave., Providence 1, R. I.—Booth 406

BINKS MFG CO., 3114-40 W. Carroll Ave., Chicago 12, Ill.—Booth 35

In attendance: C. R. Kranz, A. G. Stacy, J. Doherty.

Exhibiting: Cooling towers for air conditioning and industrial applications. New "Watertemp" line of towers will be featured.

BLANKIN EQUIPMENT CORP., N.E. Cor. 35th St. & Indiana Ave. at Ridge Ave., Philadelphia 32, Pa.—Booth C-53

BOILER ENGINEERING & SUPPLY CO., INC., Phoenixville, Pa.—Booth 343

In attendance: Walter B. Riley, Russell E. Emrich, Sr., Patrick D. Goggin, Joseph A. Hoenleitner, Paul Hunsicker, Harold G. Burrill, Maurice E. Williams, William Palm, Raymond W. Williams.

Exhibiting: "Continental" packaged automatic hot water boiler burning light oil and/or gas; new "Flow Controlled" hot water boiler.

BORG-WARNER CORP.—see YORK DIV.

BROOKSIDE CORP., P.O. Box 38, McCordsville, Ind.—Booth 308

In attendance: Claude A. Forth, Sr., Claude A. Forth, Jr., J. Wooden, and others.

Exhibiting: Propeller and centrifugal fans and power exhausters. New line of engine fan blades from 15 to 84 in. diameter, both single and double spider construction, and expanded line of spun aluminum power exhausters will be featured.

BROWNING MFG. CO., Maysville, Ky.—Booth C-110

In attendance: L. L. Browning, T. F. Jones, E. A. Smith, W. G. Owens, J. T. Lisenby, F. A. Young.

Exhibiting: V belt drives, variable pitch drives, flexible couplings, bearing units.

BROWN PRODUCTS CORP., A., 1090 Springfield Rd., Union, N. J.—Booth 431

In attendance: A. Brown, J. Aronczyk, A. Randall, B. Friedman, D. Schulman.

Exhibiting: Hot water baseboard radiation with 1 in. and ¾ in. interchangeable elements; residential boilers; chilled water air conditioning systems, including fan coil units and water chillers; summer air conditioners; electric baseboard heating. The hot water and electric baseboard radiation will be featured.

BRUNDAGE CO., THE, 512 N. Park St., Kalamazoo, Mich.—Booth 331

In attendance: L. C. Kroes, H. F. Brundage, F. W. Brundage, W. A. Rockafield, D. M. Johnston, E. R. Royal, Lou Reining, Bruce McLouth, Ray Westlund, Jr., Fred Bottiger, M. W. Marrapese.

Exhibiting: Wheels and air conditioning blowers.

BUENSOD-STACEY, INC., 45 W. 18th St., New York 11, N. Y.—Booth 54

In attendance: J. W. Kreuttner, R. Sandler, J. C. Rose, N. S. Shataloff, Dave Rickelton, R. W. Waterfill.

Exhibiting: Dual duct mixing units.

BUFFALO FORGE CO., 490 Broadway, Buffalo 5, N. Y.—Booth 507

In attendance: H. W. Wendt, W. R. Heath, C. W. Lockheart, D. R. Newcomb, W. H. Holt, R. S. Lloyd, A. E. Hauck, L. C. Davidson, R. F. Hunger, H. S. Johnson, G. C. Norman, R. G. Osborn, R. A. Hill.

Exhibiting: Centrifugal ventilating fan, air conditioning cabinet, large propeller fan, centrifugal pumps.

BUILDERS-PROVIDENCE, INC., 345 Harris Ave., Providence 1, R. I.—Booth 406

BURGESS-MANNING CO., ARCHITECTURAL PRODUCTS DIV., 5970 Northwest Highway, Chicago 31, Ill.—Booth 721

In attendance: Dick Kiley, Warren C. Kadow, Tony Davis, Pat Malone

Exhibiting: Integrated suspended ceiling offering radiant heating, radiant cooling, and acoustical control.

BURNHAM CORP., Berger Furnace Div., 2 Main St., Irvington, N. Y.—Booth 522

In attendance: A. J. Hall, Andrew Berger, John J. Hildebidle, Jack M. Delaney, Mortimer C. Clark.

Exhibiting: New "Utilaire" gas fired warm air units; new "Inversaire" for basementless homes.

BURNHAM CORP., Heating & Cooling Div., 2 Main St., Irvington, N. Y.—Booth 514

In attendance: V. A. Good, F. R. Brophy, John W. Murray, Jr., G. M. Corcoran, A. A. Ettorre, Albert Ellmer, Harry R. Way, Wm. C. Heagy.

Exhibiting: "Base-Ray" radiant baseboards, "Holiday" gas boiler, Jubilee" oil boiler, "Hide-Away" cooling unit. New "Jubilee" boiler in nine sizes available in oil boilers, oil heating units and packaged boilers will be featured.

BURNHAM CORP., Steel Boiler Dept., 2 Main St., Irvington, N. Y.—Booth 518

In attendance: A. J. Hall, D. E. Hawk, Robert Leffler, Robert Warner, Frank G. Watkin, Jr., R. J. Jakobaski.

Exhibiting: New Scotch-type packaged steel boiler available in eight sizes, wet back design, certified ratings from 4740 to 12,750 sq ft EDR steam, equivalent for hot water heating, will be featured.

BYERS CO., A. M., Clark Bldg., Pittsburgh 30, Pa.—Booth 841

In attendance: J. J. Merrill, H. K. King, J. H. Little, J. W. Cooper, C. L. Wright W. J. Mayer, R. I. Enzian, F. E. Farnan, D. A. Torisky.

Exhibiting: "4-D" wrought iron pipe and plate, bars; polyvinyl chloride (PVC) pipe and sheet.

CADY, P. L. Broadway, Route 20, Darien Center, N.Y. — Booth S-47

CALGON CO., P. O. Box 1346, Pittsburgh 30, Pa.—Booth 306

In attendance: H. B. Kivlan, J. L. Connolly R. D. Gumble, E. J. Mohney, E. J. Kausler, A. B. Henninger.

Exhibiting: Scale remover, "Micromet" plates, algaecide, waterless hand cleaner, "Banox", "Economy" powdered acid, gas leak detector, ice machine treatment, liquid ice machine cleaner.

CALUMET & HECLA, INC.—see WOLVERINE TUBE

CAMBRIDGE FILTER CORP., 738 E. Erie Blvd., Syracuse 1, N. Y.—Booth C-12

In attendance: David H. Northrup, Donald E. Wendel, Robert H. Avery, Paul M. Engle, William W. Baldwin.

Exhibiting: "Absolute" and "Aerosolve" filters. New "Absolute" filter "with clean pressure drop of less than 0.4 in wg;" new "Aerosolve" filter all-glass cartridge, new combination frame incorporating "Aerosolve" filter for dust removal and activated charcoal filter for removal of odors, and new "Aerosolve" high velocity filter will be featured.

CARNES CORP., Verona, Wisc. — Booth 247

In attendance: R. W. Krogstad, F. A. Freese, W. G. Kleinhomer, P. L. Engler.

Exhibiting: Diffusers, registers, grilles and ventilating equipment. New power roof ventilator will be featured.

CARRIER CORP., Carrier Pkwy., Syracuse, N. Y. — Booths C-153, C-155, C-161

In attendance: Charles V. Fenn, Hermann C. Hoffmann, Gordon S. Dinger, Richard S. Arnold, Robert C. White, G. V. Bond, Vincent S. Day, G. Owen Kuhen, Arwin W. Heintz, Ernest C. Hungate, Bruno P. Morabito, Phillip F. Little, William Conroy, Fenn Salter, Robert Bald, Robert Leveridge, August C. Contardi, Louis Wachs, Einar Gustafson, George Garrett, James Gabriel, Oscar H. Mehl, Herbert Peacock, George Long, Theodore Skoglund, George Robinson, Jack Voigt, Pierce Burke, William Hillen, Maurice Wilson.

Exhibiting: Automatic absorption refrigeration machine; centrifugal refrigeration machine; "Rotaspray Weathermaker"; central station equipment; refrigeration equipment; water chillers; high velocity air terminals; residential heating and cooling systems; applied equipment; water tower.

CASH VALVE MFG. CORP., A. W., 666 E. Wabash, Decatur, Ill. — Booth 843

In attendance: G. William Madden, R. S. Doherty, Rolland Ray, Ralph Hiser, Wm. F. Cope, Ed McCadden, R. David Carter, Jay Schein, Tom Burke.

Exhibiting: Steam pressure regulators, ASME relief valves, water pressure reducing valves, hydronic boiler pressure controls, anti-siphon vacuum breakers, T&P relief valves, vacuum controls, back pressure valves for oil and refrigerants, pipeline strainers. New expanded line of ASME valves will be featured.

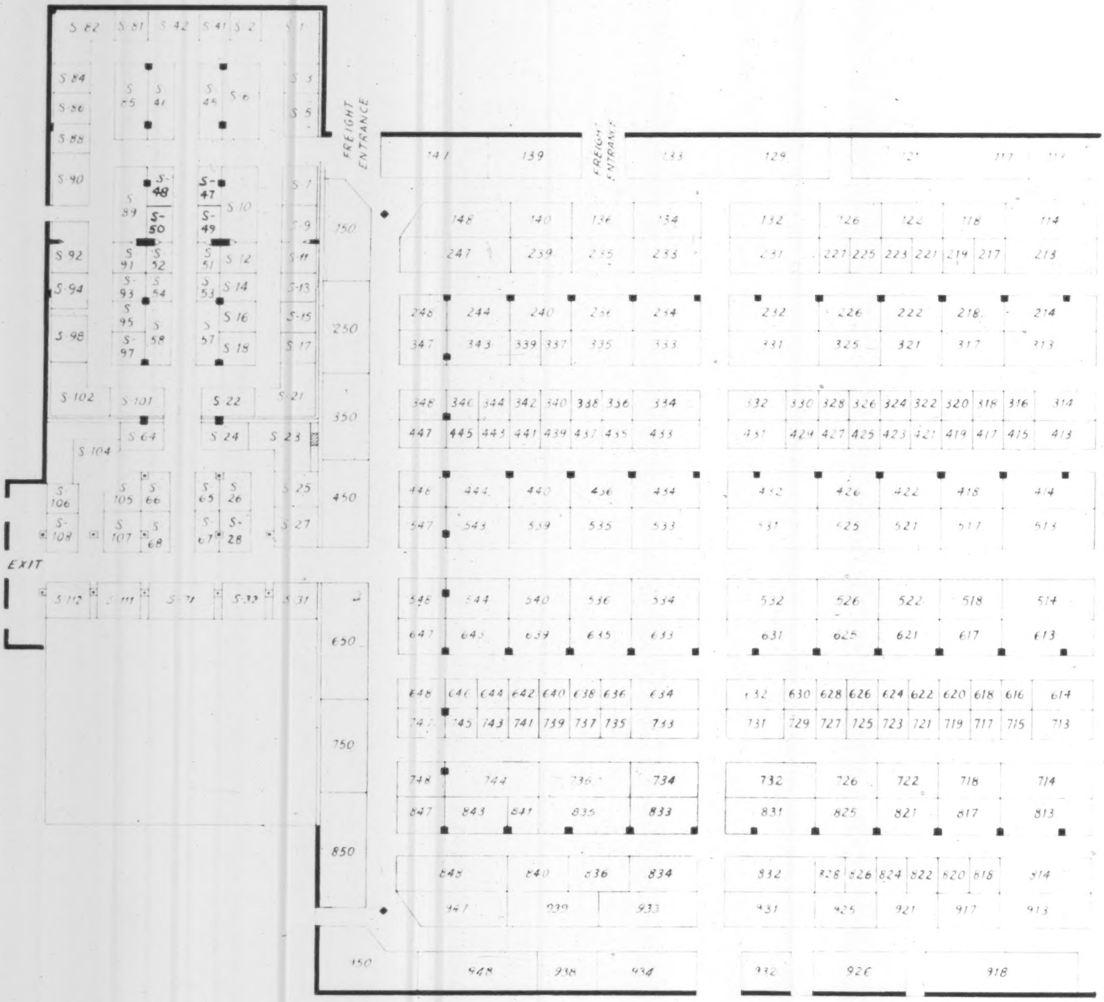
CENTURY ELECTRIC CO., 1806 Pine St., St. Louis 3, Mo. — Booth 37

In attendance: G. C. Henderson, Fred Powers, H. G. Nafe, F. E. Nutt, H. C. Knappenberger, J. S. Smith, R. E. Moseman, J. J. Kochelek, P. F. Williams, F. R. Hatfield, C. R. Luchsinger, W. D. Helm, R. L. Biller, R. E. Emo, J. P. Hoffberger.

Exhibiting: Fractional horsepower motors: split phase; permanent split capacitor; close coupled pump motors; fan motors. Single phase integral; capacitor type and repulsion start type. Polyphase integrals — squirrel cage open and squirrel cage enclosed.

Layout of Upper Auditorium Area at the Exposition • • • •

These pages show the layout of the exhibit halls on the upper auditorium and lower levels. For further information, you are invited to inquire at the Keeney Publishing Co. — publisher of Heating, Piping & Air Conditioning and of American Artisan — exhibit in Booth 709



Layout of Exhibit Halls on Lower Level

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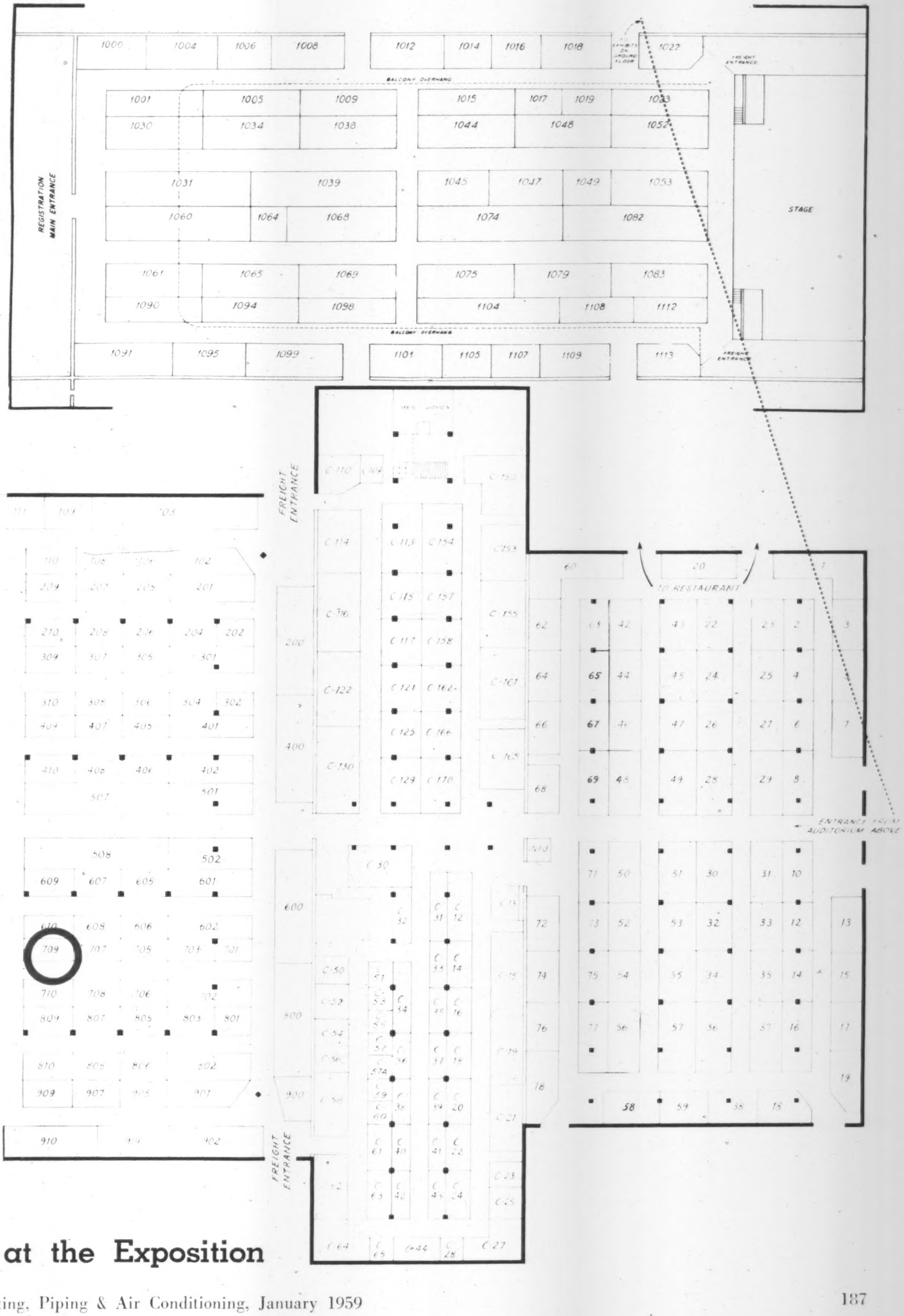

REGISTRATION MAIN ENTRANCE
BALCONY OVERHANG
EXHIBITS ON GROUND FLOOR
FREIGHT ENTRANCE
STAGE
MEN WOMEN
FREIGHT ENTRANCE
TO RESTAURANT
ENTRANCE FROM AUDITORIUM ABOVE
FREIGHT ENTRANCE

at the Exposition

CENTURY FAN & VENTILATOR CO., INC., 45 Cedar St., Stamford, Conn. — Booth S-32

In attendance: W. L. Flemming, N. Cozens.

Exhibiting: Centrifugal blower, spun aluminum roof fans, propellers, induced draft fan. Backward curved blade blower and induced draft fan will be featured.

CERRO de PASCO CORP. — see LEWIN-MATHES CO.

CHACE CO., W. M., 1600 Beard Ave., Detroit 9, Mich. — Booth 326

CHAMPION BLOWER & FORGE CO., 413 Harrisburg Ave., Lancaster, Pa.—Booth 647

In attendance: H. K. Long, H. C. Gibney, W. M. Gelvin, H. E. Mohr, J. N. Nobile, W. F. Derby, P. F. Martzall.

Exhibiting: Fans and blowers.

CHATTANOOGA ROYAL CO., Chattanooga 6, Tenn. — Booth 1094

CHEMICAL SOLVENT CO., P. O. Box 487, Birmingham, Ala. — Booth C-33

In attendance: Olivia P. Burkey (Mrs. N. A.), Noel A. Burkey Jr., Merle G. Haynes, Roy B. McCrady, W. J. McKeough, N. K. Porter, Harold Sweeney, R. A. Wolfe.

Exhibiting: "Solvex" products for removal and prevention of scale and corrosion in water cooled refrigeration and air conditioning equipment; ice machine cleaning powder.

CHICAGO BLOWER CORP., 9867 Pacific Ave., Franklin Park, Ill. — Booths 1001, 1030

In attendance: F. H. Gohl, E. R. Anderson, D. W. Davis, H. N. Jacobs, P. E. Evans, H. Easter, J. K. Shadek, M. R. Lederer, W. F. Lynch, L. L. Case, C. J. Kane, C. T. Eskola, J. Z. Peepas, E. J. Busch, R. J. Orians, E. G. Breeden.

Exhibiting: Centrifugal "Airfoil" fan, induced draft fan, forced draft fan, vaneaxial fan, roof exhausters, packaged fan, turbo pressure blower. New forced draft and induced draft fans for large and small boilers, new vaneaxial fan, and new turbo pressure blower will be announced. Sound, horsepower and air flow will be demonstrated.

CHICAGO PUMP CO., 622 Diversey Pkwy., Chicago 14, Ill. — Booth 1039

In attendance: M. Spiegel, A. H. Storch, Jr., R. S. Trethaway, A. R. Kral, D. B. Schumaker, L. M. Nechine, D. H. Amundson, S. K. Steiner, R. P. Johansen, R. Hunt, W. Hanley, D. J. Gongol.

Exhibiting: Condensation, house, booster and fire pumps; return line vacuum heating and boiler feed pumps; circulating, brine, sewage, sump, sludge pumps; pneumatic and tankless water supply systems; sealed electrode floatless pump controller; automatic alternator for duplex sets of pumps. Horizontally split case centrifugal pumps, "Sealtrode" sealed electrode floatless pump controller, and "Flush Kleen" bypass, clog-proof sewage pumps will be featured.

CHICAGO STEEL FURNACE CO., 9326 S. Anthony Ave., Chicago 17, Ill. — Booth S-71

In attendance: Robert M. Brand, Jack L. Innes, Frank D. Grothe.

Exhibiting: New upright "Dynatherm" space heater, new vertical air conditioning unit.

CHICAGO VENTILATOR CO. — see LESLIE WELDING CO. INC.

CHOLDUN MFG. CORP., 331 East St., New Haven, Conn. — Booth S-101

CHRYSLER CORP., AIRTEMP DIV., Dayton 1, Ohio — Booth 1082

CLARAGE FAN CO., Kalamazoo, Mich. — Booths 534, 536

In attendance: C. R. McConner, C. O. Fury, N. A. Melzer, R. A. Wasson, S. H. Downs, and others.

Exhibiting: Vertical sprayed coil "Multitherm" air conditioning unit, "Dynafoil" centrifugal fan with air foil design blades, three types of standard industrial exhaust fan. New "Dynafoil" high efficiency air foil centrifugal fan will be featured.

CLEAVER-BROOKS CO., 326 E. Keefe Ave., Milwaukee 12, Wisc. — Booths C-121, C-125

In attendance: Harold F. Holtz, William F. Zunker, John J. Nash, Karl K. Hilgendorf, James G. Brooks, John W. Bohlman, Carl Ward, John C. Rutter, John F. Mahar, Robert F. Martin, Bruce H. Mayer, Neal J. Smith, Joseph W. Stevens, Arthur B. Miller, Robert E. Chitty.

Exhibiting: "Model CB" 125 hp boiler; "Progress" heating boiler, oil fired, gross output 1,000,000 Btu per hr. New inspirating pilot to maintain and produce a pilot at zero gas pressure, new rotary air damper to modulate air for combustion, and single tip nozzle retractable for convenience in cleaning will be featured.

CLEVELAND HEATER CO., THE — see AIR CONTROLS, INC.

CLEVELAND STEEL PRODUCTS CORP. — see TORIDHEET DIV.

COBRA METAL HOSE, 5059 S. Kedzie Ave., Chicago 32, Ill. — Booth 735

In attendance: Paul Firring, Clyde D. Greeno.

Exhibiting: New "Crown-Line" of wet heat connectors used in connecting steam and hot water radiators to copper or steel pipe lines, combining conventional sweat fitting with newly designed compression fitting for rapidly connecting copper tube to iron pipe. Examples and information will be given about making misalignment connections, offset motion, vibration, thermo expansion and contraction. New line of pump connectors made of bronze, steel or stainless steel with iron pipe nipples or flanges in sizes from ¾ to 14 in. ID made to any required length will be introduced.

COLEMAN CO., INC., THE, 250 N. St. Francis, Wichita 1, Kans. — Booth 13

In attendance: Verne Sommers, Alan Zimmerman, Leighton Chaplin, Frank Osborn, Morrie Furnival, L. L. White, Norman Day, Tony Castello, Richard Hill, Bob Wolf, Stanley Halpern, Bill McCollum.

Exhibiting: Line of heating and air conditioning, self-contained "Polar-Pak" and "Polar Prince" air conditioning, "Trim Boy" central furnaces, "Trim Wall" heaters, "Vit-Rock" water heaters and "Blend-Air" distribution system. New air conditioning furnaces will be featured.

COLUMBIA BOILER CO. of POTTSTOWN, Box 230, Pottstown, Pa. — Booth 408

In attendance: R. W. Boarman, John G. Howley, R. E. Flora, E. J. Gallagher, John J. Meade, W. C. Garry, E. C. Beswick, V. Beno.

Exhibiting: Low pressure steel boilers, gas and oil fired; oil burner; baseboard radiation. Packaged oil fired boilers and packaged gas fired boilers will be featured.

COLUMBIA BURNER CO., 729 Ewing St., Toledo 7, Ohio — Booth 348

COMBUSTION CONTROL DIV., ELECTRONICS CORP. OF AMERICA, 1 Memorial Dr., Cambridge 42, Mass. — Booth 440

In attendance: B. E. Shaw, L. D. Sibley, P. K. Ryder, J. G. Mitchell, W. S. Tallon, E. Beaupre, D. L. Graves, H. Christiansen, K. R. Blaine, E. L. Bedard, P. P. Foglio, J. A. Wagner, A. Strenkert, J. McCauley, R. Murphy, R. E. Kittoe, A. C. Borders, W. F. Featherstone, M. Schwind, V. Kuellmer, A. Lovendahl, J. L. Carlile, L. F. Smith, F. L. Leake.

Exhibiting: "Fireye" flame safeguard controls and control systems, smoke density recorders. Safety shut-off cocks will be featured.

COMMERCIAL CONTROLS CORP. — see ELECTROMODE DIV.

COMMERCIAL FILTERS CORP., 2 Main St., Melrose 76, Mass. — Booth 932

In attendance: J. E. Chisholm, H. A. Wilson.

Exhibiting: "Fulflo" filters and honeycomb filter tubes, including trap filters, water filters, polishing filters, and filters for CO_2, compressed air, simple syrups.

COMMITTEE ON STEEL PIPE RESEARCH, AMERICAN IRON AND STEEL INSTITUTE, 150 E. 42nd St., New York 17, N. Y. — Booths 717, 719

In attendance: G. D. Lain, and representatives assigned by the Committee's sponsors.

Exhibiting: Steel pipe, with particular reference to radiant heating and snow melting installations.

CONDENSATION ENGINEERING CORP., 3511 W. Potomac Ave., Chicago 51, Ill. — Booth 248

In attendance: B. A. Johnson, Wayne Limbert, Walt Aschliman, Tom Jones, Otto Zeman, Bill Gallagher.

Exhibiting: "Vitroliner" prefabricated chimneys; "Vitroliner" open hearth fireplace for coal, charcoal, logs and barbecuing.

CONGRESS DRIVES DIV., 3750 E. Outer Dr., Detroit 34, Mich. — Booth 346

In attendance: E. A. Caskey, James Walsh, John Fitzpatrick, John Fitzpatrick, Jr., John Burns, Charles Keshen, Albert Dueweke, Stuart Chosid.

Exhibiting: V-belt pulleys, variable pitch pulleys, pillow blocks, flange bearings, V-belts.

CONKEY & CO., H. D. — see FIELD CONTROL DIV.

CONNOR ENGINEERING CORP., Shelter Rock Lane, Danbury, Conn. — Booth 631

CONTINENTAL AIR FILTERS, INC., P. O. Box 1647, Louisville 1, Ky. — Booth 933

In attendance: Wm. K. Gregory, Frank B. Johnston, Jr., Sidney S. Emison, O. Thomas Bell, John A. Taylor, Jr., L. P. Bryant, R. H. Hoover, W. S. Veirs, Crawford Robertson, Richard Durham.

Exhibiting: Air filters, featuring the "Conomanual" roll-away type air filter for vertical or horizontal operation.

CONTRACTOR, THE, Grand Central Terminal Bldg., New York 17, N. Y. — Booth 737

Exhibiting: Publication.

CONTROLS CO. OF AMERICA, 2450 W. 32nd St., Milwaukee, Wisc. — Booth 1083

In attendance: D. Albright, R. Sloane, C. Stainton, H. Welch, A. Topp, D. Henderson, D. Moerick, J. Putze.

CONTROLS CO. OF AMERICA — also see REDMOND CO., INC.

COOK CO., LOREN, Berea, Ohio — Booth 418

COOLERATOR DIV., McGRAW-EDISON CO., 704 N. Clark, Albion, Mich. — Booth C-122

COPELAND REFRIGERATION CORP., Sidney, Ohio — Booths C-166, C-170

In attendance: F. J. Gleason, W. G. von Meyer, R. G. Berg, J. E. Barker, A. E. Cadwell, F. E. Jernberg, B. Kaple, J. L. Zant, L. A. Wallace, E. R. Whitehead, J. Young.

Exhibiting: "Copelametic" motor-compressors and condensing units, "Copelweld" motor-compressors.

CORBMAN BROS. INC., 25th & York Sts., Philadelphia 32, Pa.—Booth 833

In attendance: A. L. Corbman, Philip P. Remer, M. W. Corbman, M. B. Corbman, Mrs. Mary McClain.

Exhibiting: "JusRite" prefabricated duct and fittings.

CRANE CO., 836 S. Michigan Ave., Chicago 5, Ill. — Booths 38, 58, 59

In attendance: W. A. Burbine, E. P. Allen, J. Wise, R. W. Lindsay, G. B. Batchelor, E. D. Downey, R. W. Marshall

Exhibiting: "Sunnyday" boilers, "Sunnybase" and "Sunnywall" baseboard, "Sunnyaire" unit heater.

CROWN ENGINEERING CORP., Locust St., Keyport, N. J. — Booth S-13

In attendance: R. W. Bernard, F. L. Gaskill

Exhibiting: Oil burner electrode assemblies, oil burner ignition terminals, oil burner ignition cable. Terminal display rack, terminal "Mini-Kits" and "Deluxe" master kits will be featured.

CROWN HOME EQUIPMENT CO., 1410 N. Delaware Ave., Philadelphia 25, Pa.—Booth C-50

In attendance: Sid F. Gitterman, Nelson Steingard, William McNulty, Frank Baker.

Exhibiting: Heating boiler-burner units, baseboard radiation, oil furnace, and gas-fired glass-lined water heater.

CURTIS MFG. CO.-REFRIGERATION DIV., 1905 Kienlen Ave., St. Louis 20, Mo. — Booth 802

In attendance: Harry C. Morrison, Harry J. Nettler, Andrew M. Bono, K. T. Rockey, Frank J. Hanley, John G. Graham, C. D. Sarles.

Exhibiting: Packaged air conditioner line; 3 through 50 tons; air cooled condensing unit; 3 through 7½ tons; packaged liquid chiller, 7½ through 100 tons; condenser and compressor units. Packaged liquid chillers of improved design and packaged air conditioners re-designed "to increase efficiency and reduce size" will be featured.

CUTLER-HAMMER, INC., 315 N. 12th St., Milwaukee 1, Wisc. — Booth 332

DeBOTHEZAT FANS DIV., AMERICAN MACHINE AND METALS, INC., East Moline, Ill. — Booth 1075

In attendance: R. Bouslough, R. L. Hull, V. John Meckus, F. Ford.

Exhibiting: New design "Bifurcator", new induced draft fan, roof ventilators (axial and centrifugal).

DELAVAN MFG. CO., 811 Fourth St., West Des Moines, Iowa — Booth 539

In attendance: W. E. Safris, B. S. Goreham, E. O. Olson, Fred Mulcahy, William B. Spargur, R. E. Keene, Lee N. Beardsley, William J. Thurston, William J. Debler, J. R. Starnes, H. L. Mcnally, J. D. Brown, J. O. Hill.

Exhibiting: Oil burner and industrial spray nozzles and accessories; oil burner nozzle tools, racks, strainers, adapters; flame inspection mirrors. All purpose nozzle, sintered bronze filter, "Super" nozzle changer, and nozzle box will be featured.

DELCO PRODUCTS DIV., GMC, 329 E. First St., Dayton 1, Ohio — Booth S-10

In attendance: W. J. Wagner, G. F. MacFarland, R. O. Dehlendorf, T. R. Broderick, H. E. Weisenborn, P. I. Bland, L. H. Shue, W. K. West, E. J. Boyer, C. R. Knowlton, William Calvert, C L. Holverstott, R. J. Doud, L. R. Tansek, A. Horning, K. E. Leighty.

Exhibiting: Hermetic motors, single phase motors, polyphase motors; motors for direct-drive and belt-driven applications — shaded pole, capacitor start, extended wind, polyphase, permanent split-capacitor, split phase; relays, capacitors and controllers.

DETROIT CONTROLS DIV., AMERICAN-STANDARD, 5900 Trumbull, Detroit 8, Mich. — Booths 307, 42

In attendance: Willis Stafford, K. B. Thorndike, C. U. Cole, T. C. McKee, J. S. Amneus, R. L. Campbell, F. Y. Carter, A. C. Stein, J. M. Strauss, R. M. Bard, E. E. Crowley, M. D. Hagen, S. E. Leinwand, R. H. Russell, H. Risley.

Exhibiting: Air conditioning and heating controls and control systems. Working demonstration of "Selectaflow" control showing its operation in the control of multiple room air conditioning and heating systems, with particular emphasis on the automatic changeover from heating to cooling or vice versa as the conditions demand, will be featured.

DeZURIK CORP., Sartell, Minn. — Booth 217

In attendance: David DeZurik, Jr.

Exhibiting: Easy operating valve for balancing, chill water shut-off, and cooling tower water shut-off will be introduced. It works on eccentric principle, operates with quarter turn from fully open to fully closed. First fractional movement of the handle lifts plug away from seat. Valve has resilient covered plug for tight shut-off without lubrication.

DIAMOND EXPANSION BOLT CO., INC., North Ave., Garwood, N. J. — Booth 640

In attendance: Arthur J. Hughes, Fred I. Barth, Charles W. Fuhrer

Exhibiting: Line of expansion anchors and shields for masonry, brick and hollow walls; masonry drills, tubing and pipe clamps. "Red Seal" calking anchor will be featured.

DIEHL MFG. CO., Finderne Plant, Somerville, N. J. — Booth 126

DIELECTRIC PRODUCTS CO., INC., 125 Virginia Ave., Jersey City 5, N. J. — Booth 320

DODGE CORP., F. W., 119 W. 40th St., New York 18, N. Y. — Booth C-63

In attendance: Daniel J. Howe, Jr., R. H. Kysle, Peter Mickle, Thomas Tredwell.

Exhibiting: Services of F. W. Dodge Corp., Dodge Reports, Construction Contracts Statistics, Sweet's Catalogs, Architectural Record, Dodge books.

DOERR ELECTRIC CORP., Cedarburg, Wisc. — Booth 931

Exhibiting: Special motors and gearmotors in designs made especially for heating and air conditioning field. Expanded line of sizes includes new 10 hp rating. A new line of right angle gear motors and two types of adjustable speed drives will also be demonstrated.

DOMESTIC ENGINEERING, 1801 Prairie Ave., Chicago 16, Ill. — Booths 836, 840

Exhibiting: Publication

DONGAN ELECTRIC MFG. CO., 2987-3001 Franklin St., Detroit 7, Mich. — Booth 318

DORNBACK FURNACE AND FOUNDRY CO., 1523 E. 45th St., Cleveland 3, Ohio — Booth S-105

DOVER CORP. — see PEERLESS MFG. DIV.

DOWNING STEEL PRODUCTS CO., 2305 Smithville Rd., Dayton 20, Ohio — Booth C-28

In attendance: J. M. Downing.

Exhibiting: "Super Jet" natural gas conversion burner.

DRAVO CORP., Dravo Bldg., Pittsburgh 22, Pa. — Booth 121

DRAYER-HANSON DIV., NATIONAL-U.S. RADIATOR CORP., Los Angeles, Calif. — Booth 600

DRYER ELECTRIC CORP., 164 Wallabout St., Brooklyn 6, N. Y. — Booth C-32

In attendance: Remi A. Benoit, Mowry W. Keith, Charles W. Coward, Jr.

Exhibiting: Compact tubular centrifugal fans with inlet vane controls.

DRYOMATIC CORP., 806 N. Fairfax St. P. O. Box 334, Alexandria, Va. — Booth S-50

DUNHAM-BUSH, INC., 179 South St., West Hartford, Conn. — Booths 650, 750, 850, 950

In attendance: Cecil Boling, James Mulcahey, Walter Browning, Alan Decker, George Sinichko, George Davis, Robert Lennox, Norman Sorgenfrei, Cliff Kimmel, George Hartwell, Charles Cavanugh, Robert Bradford, William Murphy, A. E. McDade, J. T. Golitz, David Brown, George Finck, J. W. Thomas, Hugo Basch, Milton Kalish, Kenneth Mott, David Sorin, G. L. Hickey, Jr., Lester Kluger, Al Lincoln, Joseph Connors, Al Rockafellow, R. J. Barager, J. M. Westerman, W. D. Kopenhaver, Kurt Cleaver, J. K. Campbell, George Mansinger, Marvin Williams, Robert Schultz, A. R. Treveiler, Clifford Masek, Everett Janke, Kenneth Kob, Carl Gaebel, Edward Albin, Lawrence Colberg, Mathew Collins, David O'Brient, Robert Bradford, Pat Shea, G. L. Jackson, John Castello, Frank Carryl, Al Hines, Carl Willhoft, Robert Adams, Peter Catalina, Ross Karns, J. Swanson, Jim Gregory, Harry Smith, William Moffett, Aaron Kaminsky, John Tynan, Robert Luken, E. L. Disbrow, John Haig, W. B. Cooper, John Wandas, John English, Perley Barker, Russell Comstock, Lawrence Jennings, and others.

Exhibiting: More than 180 units will comprise the display. Recently introduced cooling-heating conditioner; large remote central units; cleanable shell and tube condensers; and combination air cooled-water cooled condensers will be featured. An operational display of heating and air conditioning with an air cooled package chiller and cooling-heating units will also be shown.

duPONT de NEMOURS & CO., E. I., Wilmington 98, Dela. — Booth 1004

DURANT INSULATED PIPE CO., P. O. Box 88, Palo Alto, Calif., and P. O. Box 263, Williamstown, N. J. — Booth 205

In attendance: Thomas I. Andrews, Anthony J. Oswald, Roger D. Williams, Richard W. Alexander, Harry B. Doland, Jr., William D. Richards, John H. Harris, Jr., Roger Clawson.

Exhibiting: Insulated pipe conduit for steam, hot water, and refrigerant distribution systems. New conduit with spirally welded, heavy gage steel casing protected by coal tar enamel, the steel casing being pressure tight which enables the system to be air tested for leaks after installation, will be featured.

DURA-VENT CORP. — see PEERLESS MFG. DIV.

DURO-DYNE CORP., Route 110, Farmingdale, L. I., N. Y. — Booth 432

In attendance: Milton Hinden, Martin Gracer, Fred Hunter, Robert Chisholm.

Exhibiting: Flexible duct connector, "Duro-Vane-Rail", multi-blade damper hardware, opposed action damper hardware, "Jiffy" dampers, dial damper regulators, quadrants and accessories, "Shur-Grip" file handles and solder iron handles, "Greyhound" portable spot welder, metal punches, insulation adhesive, duct tape, "Ramex" air hammer. New style duct connector and the air hammer will be featured.

DWYER MFG. CO., F. W., P. O. Box 373, Michigan City, Ind. — Booth 202

In attendance: J. G. Dwyer, P. W. Dwyer, John McKeague.

Exhibiting: Combustion test kits, air flow measurement, air filter gages, draft gages, differential pressure gages and switches. New air filter gage will be introduced.

EAGAN CO. INC., WALTER H., 2336 Fairmount Ave., Philadelphia 30, Pa. — Booth 445

In attendance: David J. Smith, Tobias Koch, Peter Delaney, A. R. Dervaes, John McGonigal, Ray Dodge, James Sullivan.

Exhibiting: Condensate, chemical feed, turbine, and centrifugal pumps and fuel oil pump and heater sets.

ECONO PRODUCTS CO., INC., East Haddam, Conn. — Booth 147

In attendance: Alan C. Davis, John F. Glump, Daniel B. Doane, Dave Tucker, George Ryczek, Lou Cobin.

Exhibiting: "Zone-A-Trol" motorized valves, accessories and equipment; dampers. Three-way bypass valve for zoning two-pipe heating and cooling systems up to 250 psi, three-way venturi valve for zoning one-pipe loop systems, and damper for zoning warm air systems, will be featured.

EDDINGTON METAL SPECIALTY CO., 3088 Bristol Pike, Eddington, Pa. — Booths 221, 223.

In attendance: Walter V. Czarnecki, Jr., Stanley Czarnecki, Casimer M. Czarnecki, Wesley Czarnecki, Stanley Czarnecki, Jr., Richard Connell.

Exhibiting: High and low pressure oil burner nozzles, filters, combustion heads, strainers, inspection mirrors, servicemen's kits, pressure regulating valves, nozzle adaptors, condensate disposal units, air cones, stabilizers, etc. Heavy oil strainer for Nos. 4, 5, and 6 fuel oil will be featured.

EDWARDS ENGINEERING CORP., 101 Alexander Ave., Pompton Plains, N. J. — Booth C-154

In attendance: R. C. Edwards, E. A. Bogucz, N. J. Driscoll, J. E. Weintraub.

Exhibiting: "Zone-A-Matic" heating systems, motorized zone control valves, "Airvec" gravity (convection) condensers. New high capacity baseboard radiation, motorized valves with new mercury switches, and gravity evaporator-cooler will be featured.

ELECTRIC BOAT DIV., GENERAL DYNAMICS CORP., Groton, Conn. — Booth 707

In attendance: R. Neuendorffer, W. M. Stratton, J. A. Currie, A. G. Anderson, J. Kennedy.

Exhibiting: Vaneaxial fans and blowers, vibration analysis equipment.

ELECTRIC FURNACE-MAN, INC., 4th & Furnace Sts., Emmaus, Pa. — Booth 948

In attendance: E. A. Emmert, George Lenza, Norwood Allender, Raymond Losch, Harold Wentz, F. L. Hilder, George Hewitt, Stewart Beaubien, Harry Campbell, John Cooke, Arthur Ennis, Arthur Floyd, John Hughes, Glenn Kepner, C. H. Olandt, George Warner.

Exhibiting: Oil, gas and anthracite fired residential automatic heating equipment for hot water, steam and warm air systems. Special features will be fully automatic operation of "Fire-Jet" anthracite burner by means of pneumatic coal and ash handling systems, and anthracite boiler burner unit under fire for demonstration purposes.

ELECTRIC HEAT, 2 W. 45th St., New York 36, N. Y. — Booth 226

Exhibiting: Publication.

ELECTRO-AIR CLEANER CO., INC., Olivia & Sproul Sts., McKees Rocks, Pa. — Booth C-165

In attendance: P. W. Aitkenhead, R. C. Aitkenhead, E. L. Baysek, J. E. McGivern, D. J. Conroy, C. V. Watahs.

Exhibiting: Electronic air cleaners — residential, commercial and industrial units. Detergent-adhesive system with "DAX" cleaning and adhesive application solution for electronic air cleaners will be featured.

ELECTRO DYNAMIC DIV. OF GENERAL DYNAMICS CORP., Bayonne, N. J. — Booth 330

In attendance: George A. Ralph, Edwin R. Campbell, Daniel J. McCole, Rene A. Vanina.

Exhibiting: Drip-proof motors, explosionproof motors, variable speed drives. Special feature of booth will be periodic showing of recent film on "Atlas" intercontinental ballistic missile, a product of the Convair Div. of General Dynamics Corp.

ELECTROMODE DIV. OF COMMERCIAL CONTROLS CORP., 570 Culver Rd., Rochester, 3, N. Y. — Booth 1049

In attendance: Paul D. Hawkins, Lowell R. Mast, Pat A. Dieffenbach.

Exhibiting: Line of all-electric heaters, — wall-type fan-circulating heaters, portable fan-circulating heaters, radiant convection panel heaters, radiant baseboard heaters, radiant cable heating, insert duct heaters, commercial and industrial heaters, suspension-type unit heaters, combination portable and suspension-type unit heaters, explosionproof heaters, milk house heaters, and pump house heaters. New insert duct heaters will be featured.

ELECTRONICS CORP. OF AMERICA — see COMBUSTION CONTROL DIV.

ELGEN MFG. CORP., 32-49 Gale Ave., Long Island City 1, N. Y.—Booth S-90

ELLICOTT FABRICATORS, INC., Clare & Kloman Sts., Baltimore 30, Md.—Booth S-106

In attendance: Howard M. Kelley, Richard J. Pardo, F. C. Latrobe, J. M. Schiavetti.

Exhibiting: Cutaway model of hot water generator with baked phenolic lining; shell and tube type heat exchanger.

EMERSON ELECTRIC MFG. CO., THE, 8100 Florissant Ave., St. Louis 21, Mo.—Booth 1098

EMPIRE CHEMICAL PRODUCTS CO., 10 Longworth St., Newark 2, N. J.—Booth 429

In attendance: J. E. White, Jr., M. A. Travisano, H. E. Owen.

Exhibiting: Furnace vacuum cleaners.

ENGELHARD INDUSTRIES, INC. — see HANOVIA LAMP DIV.

ENGEL SHEET METAL EQUIPMENT, INC., 8122 Reilly Ave., St. Louis 11, Mo.—Booths C-114, C-116, C-118

In attendance: Charles F. Engel, Joseph R. Yoch, Roland A. Gotsch, Jack Bastable, Edward Ezzell, Robert Enger, William Tanner, Richard Taylor, O. H. Wolters.

Exhibiting: "Shopmaster," electric shears and nibblers, calibrated bench bars and squares, multiple notching units, open end flangers, roll forming equipment. "Edgenotcher," "Edgemaster" flanger, "Mighty Midget," and cleat bender will be featured.

F5 AIR CONDITIONING CORP., 1901 S. Maybelle, Tulsa 7, Okla.—Booth 436

In attendance: W. F. Matheny, W. F. Matheny, Jr., T. J. Small.

Exhibiting: Air cooled condensers and condensing units.

FAFNIR BEARING CO., THE, 37 Booth St., New Britain, Conn.—Booth S-25

In attendance: R. W. Powell, H. C. King, R. E. Downs, E. M. Hayden, Jr., N. B. Bagger, C. W. Jones, Jr.

Exhibiting: Ball bearings and ball bearing power transmission units.

FARR CO., 2301 Rosecrans Ave., El Segundo, Calif.—Booths 10, 12

In attendance: Ken De Baun, Ken Baker, Gordon Thruelsen, Frank Doody, T. J. Galvin, J. Iallegio, Ed Williams.

Exhibiting: Standard panel filters; "Microloc" high efficiency deep-pleated filter; grease eliminators; "Roll-Kleen" automatic filters. Disposable, high-performance filter; "Roll-Kleen" horizontal automatic filter; "Hi-Kleen" two-stage automatic, disposable filter; manual "Roll-Kleen" semi-automatic, disposable media filter, will be featured.

FASCO INDUSTRIES, INC., 255 N. Union St., Rochester 2, N. Y.—Booth 413

In attendance: H. M. Sylvester, Sr., H. M. Sylvester, Jr., C. A. Button, D. R. Schroedel, J. M. Nolan, P. R. Reid, W. A. MacDougall, B. R. Robinson, D. G. Matthews, R. J. Eckert, R. E. Waffle, L. P. Doty, W. N. Agnew.

Exhibiting: Line of shaded pole motors ranging in horsepower from 1/6 to 1/500, along with centrifugal blowers rated at 15 to 320 cfm at zero static pressure.

FEDERAL BOILER CO., INC., Granite & West Sts., Midland Park, N. J.—Booths 800, 900

In attendance: Raymond H. Bohr, James H. Legg, Walter Gamble, I. M. Holland, Charles Lowrey, Quay Yendall, William Leetch, William Klein, Herbert Klaw, Roy M. Rathe, Charles Cavanagh, George McGrath, Thomas McGrath, John Honsch, Robert McTaggart, Eric Adams, Parker Tyler.

Exhibiting: Residential steel and cast iron boilers, oil and gas fired; commercial steel boilers; baseboard.

FEE & MASON MFG. CO., INC., Manasquan, N. J.—Booth 314

FIELD CONTROL DIV., H. D. CONKEY & CO., Mendota, Ill.—Booth 50

In attendance: H. J. Potter, H. A. Remsburg, Leo Pfister, W. F. Hirsch, Fay L. Kinne, Ray Westlund, Jr., J. Harry Reilly, John A. Sandberg, J. R. Starnes, Wayne M. Davis, Paul R. Jett, Howard Waff, Jr., Roy F. Johnson, Norris Blanchard, Norman R. Cole, William D. Bogh, John Elder.

Exhibiting: Domestic, commercial and industrial barometric draft controls for heating and processing equipment; new triple fuel unit for industrial installations that can be converted on the job for use with gas, oil or coal fired units; new unit for commercial gas fired installations made in 7 and 8 in. sizes.

FITZGIBBONS BOILER CO., INC., 101 Park Ave., New York 17, N. Y.—Booth 1047

In attendance: P. K. Addams, E. M. Swartz, G. E. Olsen, G. Nelligan, J. Gadzuk, J. C. Woodson.

Exhibiting: Packaged boiler-burner unit, gas fired packaged boiler. New "4000 Series" residential boiler-burner units, both gas and oil fired, will be featured.

FLANDERS FILTERS, INC., P. O. Box 718, Riverhead, N. Y.—Booth C-162

In attendance: Representatives of Mutimer Co.

Exhibiting: "Airpure" absolute filters, ceramic filters, air purification systems, "Expandure" filter.

FLEXIBLE TUBING CORP., Guilford, Conn.—Booth 706

In attendance: Frederick K. Daggett, Howard

W. James, Richard B. Connell, William A. Butler, Lew W. Crockett, Jr., G. William Loveday.

Exhibiting: Wire reinforced flexible fabric ducting for both high and low pressure air conditioning systems, including "Thermaflex-A", constructed of a continuous wire helix with a three ply laminate of woven fiber glass plus two metallic sheets; and "Thermaflex-ST", made of a vinyl coated fiber glass reinforced with a vinyl coated spring steel wire helix, in diameters 2 through 12 in. and lengths up to 16 ft. Other products shown will include special tubes for fume removal, dust control, and air handling and ventilation for a wide variety of industrial and OEM applications.

FLEXONICS CORP., 1391 S. 3rd Ave., Maywood, Ill.—Booth 638

In attendance: H. V. Tastrom, W. J. Ribbentrop, C. L. McCormick, T. Hoey, J. J. Vaughan, R. F. Ford, A. C. Winter, R. M. Reinckens, E. A. Malling, T. K. Wells.

Exhibiting: Expansion joints, compensators, pipe guides, flexible connectors, "Rex-Pipe" hose, "Vibra Sorbers". Pipe alignment guides will be featured.

FLINTKOTE CO., THE — see VAN-PACKER CO.

FRICK CO., W. Main St., Waynesboro, Pa.—Booth 309

In attendance: W. H. Aubrey, J. T. Sanders, M. W. Garland, W. O. Kline, R. M. Shuford, M. B. Watts, Joaquin Alvarez, P. H. Buch, Terry Mitchell, Cyril Leech, Arthur McArthur, J. T. Murphy, R. A. Ebner, P. A. Willis, W. J. Dugas.

Exhibiting: Packaged water chiller of 50 to 60 tons capacity; 15 hp unit air conditioner; display of machine parts, valves, fittings, and controls on a revolving turntable; enlarged photographs, and special bulletin on air conditioning systems printed expressly for this exhibit. Both the packaged water chiller and the unit air conditioner are new equipment, being exhibited for the first time.

FRIGIDAIRE DIV., GENERAL MOTORS CORP., Dayton 1, Ohio—Booth 1023

In attendance: F. E. Lehman, Harry H. Ward, R. A. Kramer, F. B. Hartney, W. H. Winn, P. B. Beemsterooer, R. S. McCool.

Exhibiting: Home air conditioning and heating equipment, commercial air conditioning equipment, commercial ice makers. New 1959 room air conditioners for special through-the-wall installation, plus window installation (casement type highlighted); new "Trans-Wall" air conditioner; new 110 pound capacity ice cube maker for small restaurants; motels, etc. will be featured.

FUEL OIL & OIL HEAT, 2 W. 45th St., New York 36, N. Y.—Booth 226

Exhibiting: Publication.

FULLER CO. — see LEHIGH FAN & BLOWER DIV.

FULTON SYLPHON DIV. — see ROBERTSHAW-FULTON CONTROLS CO.

FURNAS ELECTRIC CO., 1000 McKee St., Batavia, Ill.—Booth 620

In attendance: W. F. Lisman, Walter A. Meyer, J. M. O'Rourke, D. W. Smardon, P. Schellenberg, A. R. Moore

Exhibiting: Motor control for air conditioning, heating and refrigeration, including starters and contactors which provide across-the-line control of hermetic and general purpose motors, specifically designed to meet performance, space and economic requirements of air conditioning and refrigeration. New two, three and four pole contactor for heating, air conditioning and refrigeration, rated 20, 30 and 40 amperes, "with simple to change coils, easy to change contacts, high voltage ratings, and any position mounting," will be featured.

GALLAHER CO., THE, 4108 Dodge St., Omaha 3, Nebr.—Booth C-14

In attendance: I. I. Solzman, David Solzman, R. D. Holland, George Linge, Herman Plasse, Herbert Boardman, Robert Trenner.

Exhibiting: "Super Air-Van" power roof exhauster molded in reinforced "Fiberglas".

GANNON CO., INC., THE RUSSELL R., 5537 Vine St., Cincinnati 16, Ohio—Booth 1091

GAS HEAT & COMFORT COOLING, 2 W. 45th St., New York 36, N. Y.—Booth 226

Exhibiting: Publication.

GENERAL AIR PRODUCTS CORP., 14 Factory St., Cedar Grove, N. J.—Booth 613

In attendance: Hrant H. Yousoufian, Bruce Anderson, Russell D. Anderson.

Exhibiting: Registers, grilles, diffusers.

GENERAL AUTOMATIC PRODUCTS CORP., 2300 Sinclair Lane, Baltimore 13, Md.—Booth 422

Exhibiting: "Floor level" baseboard radiation, "DeAirator" tanks, oil fired warm air furnances, oil fired steel boilers. Gas fired boilers will be featured.

GENERAL BLOWER CO., 8618 Ferris Ave., Morton Grove, Ill.—Booth 808

In attendance: Wm. W. Meyer, R. P. Scott, S. D. Mullin, T. A. Russell, R. H. Lynch, P. J. Roy.

Exhibiting: Backward blade and forward curved centrifugal fans, "Dura-Temp" high temperature fans, turbo pressure blower, "Util-A-Vent" and "Fan Pac" packaged ventilating sets, industrial fans, inlet vane controls. High temperature fans and industrial fans will be featured.

GENERAL CHEMICAL DIV., ALLIED CHEMICAL CORP., 40 Rector St., New York 6, N. Y.—Booth 148

In attendance: H. C. Burki, T. T. Barbara, W. H. Huntsman.

Exhibiting: "Genetron Super-Dry" refrigerants.

GENERAL CONTROLS CO., 801 Allen Ave., Glendale 1, Calif.—Booth 513

In attendance: J. F. Ray, Fred Weldon, Jack Wolff, Doug Sterner, Bob Cody, Hugh Cameron, Briggs Crichton, Russ Strongman, George Crothers.

Exhibiting: Gas and oil controls—primaries, safeties, limit controls, regulators, pilots, pilot generators, combustion controls, "B-60" control system, "Perfxray," thermostats, indoor-outdoor temperature control system, combination gas controls; Air conditioning and refrigeration controls — solenoid valves, thermostatic expansion valves, distributors, master control panels, accessory controls; commercial/industrial controls, — boiler controls, valves, regulators, low water cut-off, pilot solenoid valve, combustion controls and instruments, actuators, "Flamepulse," proportioning "Hydramotor" and damper, high temperature hot water systems, air motors. Indoor-outdoor temperature control system, "Thermoramic", "Decor" thermostats, proportioning thermostat, "Versatrol" combination gas control, air conditioning panels, new solenoid, boiler feeder solenoid, 12 ton, expansion valve will be featured.

GENERAL DYNAMICS CORP. — see ELECTRIC BOAT DIV. and ELECTRO DYNAMIC DIV.

GENERAL ELECTRIC CO., 1 River Rd., Schnectady, N. Y. — Booth 1061

In attendance: C. M. Hawthorne, J. A. Rosman, John Stoutland, J. L. McLaughlin, P. J. Fitzgerald, Mark Hopkins, Jr., Frank Walters.

Exhibiting: Leak detectors, controls, hermetic motors, specialty motors, fan and limit controls.

GENERAL ELECTRIC CO., AIR CONDITIONING DEPT., Troup Highway, Tyler, Texas — Booth 1063

GENERAL FILTERS, INC., 43800 Grand River Ave., Novi, Mich. — Booth 410

In attendance: Robert G. Gregory, Roland A. Redner, Robert P. Redner, William A. Proctor, Mrs. Grace Redner, and others.

Exhibiting: New warm air humidifier with phenolic evaporator pan, fuel oil filters for both light and heavy fuel oils, "Clean Right" soot remover, water trap, etc.

GENERAL FITTINGS CO., P. O. Box 151, East Greenwich, R. I. — Booth 614

In attendance: Robert F. Hull, Sydney J. Hayden, Edmond Fain, William K. Near, Charles A. Maine, John A. Cady, Donald E. Hare.

Exhibiting: Heat exchangers, electric heating units, heating specialties, pipe unions, solder fittings. New heating specialties and combination steam-electric fuel oil preheaters will be featured.

GENERAL PRODUCTS CO., INC., P. O. Box 661, Fredericksburg, Va. — Booth 324

In attendance: F. C. McGready, J. E. Rowell, R.C. Brillhart, H. S. McKann.

Exhibiting: "Air-Jet" packaged chimneys for all fuels, and "Air-Jet" gas vents.

GENERAL MOTORS CORP. — see DELCO PRODUCTS DIV. and FRIGIDAIRE DIV.

GENERAL-REPUBLIC HEATING PRODUCTS CO., 7426 State Rd., Philadelphia 36, Pa. — Booth 1112

In attendance: Wm. H. Bunten, Paul H. Bunten, Walter S. Wisniewski, Benner Hunt, J. R. Donley, Roy Horton, John Ickeringill, Joseph Myers, Eugene Brenaman, George L. Brown, W. H. Schrum, M. F. Henry, C. L. Hewitt, Jr., Daniel Kelleher, Harold McLaughlin, A. E. McAvoy, Henry L. Reese, Jr., Ralph Rawles.

Exhibiting: Gas boiler, oil boiler, baseboard radiation, convector radiation, winter air conditioner.

GERWIN INDUSTRIES, INC.—see THERMO-BASE DIV.

GOODFELLOW CO., INC., E. D., 496 E. Bodley Ave., Memphis 6, Tenn. — Booth 304

In attendance: E. D. Goodfellow, C. E. Goodfellow, C. R. Crain, W. T. Dawkins.

Exhibiting: Induced draft cooling towers, centrifugal pumps.

GOODYEAR TIRE & RUBBER CO., 1144 E. Market St., Akron 16, Ohio — Booth C-24

In attendance: C. E. Davis, H. J. Smith, J. L. Krouse.

Exhibiting: "Pliotron" air filters. New filter for commercial-residential market will be presented for first time during this exposition.

GORDON & PIATT, INC., Bldg. 3110 Strother Field, P. O. Box 914, Winfield, Kans. — Booth 43

In attendance: M. K. Gordon, R. T. McLendon, W. E. Robb.

Exhibiting: Forced draft gas and combination gas oil burners ("Turbo-ring", capacity ½ to 8 million Btu/hr); atmospheric inshot gas burner (capacity up to 15 million Btu/

hr); atmospheric upshot gas burner, "Blue Line" (capacity up to 8 million Btu./hr); power gas burner, "Turbo Fire" (capacity up to 18 million Btu/hr); domestic gas conversion burners (capacity 75,000 to 300,000 Btu/hr), "Turbo Ring" forced draft gas-oil burner will be featured.

GOVERNAIR CORP., 4840 N. Sewell, Oklahoma City 18, Okla. — Booth 78

GRAYSON CONTROLS DIV., ROBERTSHAW-FULTON CONTROLS CO., Long Beach Blvd. at Long Beach Freeway, Long Beach 5, Calif. — Booths 334, 336

In attendance: H. F. Jacobsmeyer, W. D. Steele, R. C. Faust, M. G. Nicholas, M. J. Caparone, W. F. Jackson, A. C. Hansen, T. H. Pender

Exhibiting: Central and space heating controls and accessories.

GRINNELL CO., INC., 260 W. Exchange St., Providence 1, R. I. — Booth 531

Exhibiting: Pipe fittings, PVC fittings, welding fittings, unions, diaphragm valves, unit heaters, pipe hangers and supports, constant supports, prefabricated piping, automatic sprinklers.

GULF OIL CORP., Gulf Bldg., Pittsburgh 30, Pa. — Booth 1109

GUSTIN-BACON MFG. CO., 210 W. 10th, Kansas City 5, Mo. — Booth 547

Exhibiting: "G-B" prefabricated round glass fiber air duct, "Ultralite" duct insulation and liner, "Snap-On" glass fiber pipe insulation.

HAMMOND VALVE CORP., 1844 Summer St., Hammond, Ind. — Booth C-54

In attendance: H. L. Seder, M. R. Beschloss

Exhibiting: Industrial bronze valves; heating specialties; solder end gates, globes and check valves. New products will be featured.

HANOVIA LAMP DIV., ENGELHARD INDUSTRIES, INC., 100 Chestnut St., Newark 5, N. J. — Booth S-16

In attendance: George E. Briechlē, Jack Grabow, Gerald M. Malone

Exhibiting: "Infra-Safe" infra-red radiant heater.

HARRIS & CO., ARTHUR, 210-218 N. Aberdeen St., Chicago 7, Ill. — Booth 622

HART & COOLEY MFG. CO., 500 E. 8th St., Holland, Mich. — Booth 209

In attendance: G. D. Heeringa, E. J. Rowder; J. H. Van Dyke, R. W. Gordon, W. K. O'Brien, G. J. Braun, R. J. Kubat, T. J. Macklin, R. G. Waalkes, W. Wessels, C. K. Souder, R. Wraight.

Exhibiting: Registers, grilles and diffusers for warm air heating and air conditioning systems, including residential and commercial installations. New "Metlvent" line of type B gas vent pipe and fittings for various types of gas heaters and appliances will be shown for first time.

HASTINGS AIR CONTROL, INC., 3215 Leavenworth, Omaha 5, Nebr. — Booth 1090

In attendance: P. W. Wintroub, L. W. Wintroub, R. L. Wintroub, M. S. Frankle, Felix Roth.

Exhibiting: Air conditioning unit, well or chilled water, 1000 to 24,000 cfm; "Double-Kool" self contained floor unit, 1200 to 3500 cfm; power gas burners, inshot type, 200,000 to 700,000 Btu; "Adjusto V" burners in 22 standard sizes, 360,000 to 4,400,000 Btu; gas unit heaters, fan, blower and duct furnace models, 80,000 to 250,000 Btu; "Micro-Heaters", fan models, 25,000 to 75,000 Btu; "Hoist-It" portable hoist for raising or lowering cooling or heating equipment, 4000 lb maximum, 24 ft lift; "Clean-it" portable unit for cleaning and descaling refrigeration, air conditioning and heating equipment. "Micro-Heaters" and expanded line of power gas burners will be featured.

HEAT CONTROLLER, INC., 1900 Wellworth Ave., Jackson, Mich.—Booth S-67

In attendance: J. A. Knight, M. A. Naus, H. P. Ellis.

Exhibiting: Central air conditioners—remote air cooled compressor-condenser units, 2 through 5 hp; matching evaporators; coils; universal blowers; self-contained air cooled air conditioners, 2, 3 and 4 hp; electric dehumidifiers with humidistat and electric heating elements. Universal blowers which can be changed in field to allow horizontal; upblast, and downblast air discharge, and dehumidifier with automatic humidistat; will be featured.

HEATING & AIR CONDITIONING CONTRACTOR, 92 Martling Ave., Tarrytown, N. Y. —Booth 715

Exhibiting: Publication.

HEATING, PIPING & AIR CONDITIONING, 6 N. Michigan Ave., Chicago 2, Ill.—Booth 709

In attendance: Chas. E. Price, Wallace J. Osborn, Robert A. Jack, C. M. Burnam Jr., Robert W. Roose, James D. Thomas, George C. Cutler, Thomas V. Johnson, Robert J. Osborn, Tom Hughes, Donald T. Brickner, Richard G. Osborn, Donald Bahnfleth.

Exhibiting: "Heating, Piping & Air Conditioning"—for Consulting Engineers, Mechanical (Heating, Piping, and Air Conditioning) Contractors, Engineers in Industry and Large Buildings; reprint books; market data; "Air Conditioning Newsletter."

HEAT-TIMER CORP., 657 Broadway, New York 12, N. Y.—Booth 609

In attendance: Edward J. Zeitlin, Albert Fowler, Harry Zeitlin, Gerard Micelli.

Exhibiting: Smoke alarms, smoke recorders, electronic weather-actuated control, heat recorders, automatic burner shutdowns, zone control valves, motorized valves, radiator air valves, main line air vent valves. "Zonvalve" thermostatically-controlled motorized zone control valve to permit temperature control of multiple zones with only one circulator, installed on supply lines or on radiators, and with low voltage wiring, will be featured.

HEIL PROCESS EQUIPMENT CORP., 12901 Elmwood Ave., Cleveland 11, Ohio—Booth S-26

In attendance: E. W. Vereeke, R. F. Protiva, G. Kelso, G. Horne, W. West, O. Lohkemper, C. Wright.

Exhibiting: Centrifugal and axial fans (solid plastic and lined steel), corrosion resistant fume exhaust hoods, ducts of solid plastic and lined steel, fume scrubbers (solid plastic and lined steel). "Giant" plastic fan and all plastic fume washer will be featured.

HEIL-QUAKER CORP., 647 Thompson Lane, Nashville, Tenn.—Booths 51, 53

In attendance: C. W. Milligan, George Hochstein, Peter Costomiris, Fred Zwanzig, Karl Mould, Bud Heiting, Charles Kahl, E. M. Stockdell.

Exhibiting: "Sleekline" high-boy, "Sleekline Economy", "Sleekline" counterflow, gas conversion burner, recessed wall heater, oil fired furnace, high boy furnace, horizontal furnace, oil conversion burner, air conditioner. The "Sleekline" high-boy and the recessed wall heater will be featured.

HENRY FURNACE CO., THE, Medina, Ohio—Booths 26, 49

In attendance: R. N. Campbell, Edward P. Hayes, A. J. Ritter, C. L. Grandstaff, E. G. Swain, J. S. Garber, E. J. Marre, Jr., J. P. Cullin.

Exhibiting: "Moncrief" gas fired winter air conditioners, oil fired winter air conditioners (upflow, counterflow, basement type and horizontal); combination year 'round air conditioners (air or water cooled, gas or oil fired); summer air conditioners (air cooled); blower-coil units; gas fired unit heaters; gas conversion burners. New 2, 3 and 5 hp air cooled condensing units with companion circular, plenum-type evaporator coils, duct-type evaporator coils and blower-coil units; and new factory assembled 175,000 and 200,000 Btu input gas fired winter air conditioners will be featured.

HENRY VALVE CO. 3215 North Ave., Melrose Park, Ill.—Booth 313

In attendance: C. V. Gary, George Schaefer, Evan Jones, C. W. Hudzietz, Paul G. Kollberg, Robert W. Carvell, Robert C. Johnson, Robert S. Dickert, Jules A. Endweiss, Jr., Edwin A. Flesh, Raymond J. McCahill, Berthold Rossnagel, Joseph E. Scherer, Jr.

Exhibiting: Valves, driers, strainers and accessories for refrigeration, air conditioning and industrial applications. Cutaway samples will be mounted on display panels in four product groups: wing cap valves; ammonia valves; valves for refrigerants 12 and 22, etc.; and driers, strainers and liquid indicators. New line of cartridge type angle filter-driers, improved "Golden Bantam" packless valves which can be soldered in the line without dismantling valves, new lines of forged brass and cast bronze "Y" strainers, refrigerant charging lines, check valves of improved designs, new strainer-capillary tube combinations, new terminal seals for sealed units, and dual gage charging and testing manifold will be featured.

HERRMIDIFIER CO., Neffsville, Pa. — Booth S-85

HIGHSIDE CHEMICALS, INC., 10 Colfax Ave., Clifton, N. J.—Booth 236

In attendance: John F. Post, Albert R. Shelby.

Exhibiting: "Thawzone" fluid refrigeration dehydrant, "Trace" liquid leak detector, "Leaklock" joint sealing compound for chemicals and refrigerants.

HILTI RAPID FASTENING SYSTEM, INC., 73 Southfield Ave., Stamford, Conn.—Booth S-31

In attendance: H. P. Rossiger, H. J. Shillings, H. A. Hubbard, Sr., D. Schectman, B. Rooney.

Exhibiting: Fastening tools and fasteners, hand actuated and power assisted.

HOWELL ELECTRIC MOTORS CO., Howell, Mich. — Booth S-97.

HUCK MFG. CO., 2480 Bellevue Ave., Detroit 7, Mich.—Booth 24

In attendance: A. J. Upton, Edward Walsh, William Newton, A. R. Tenny, Sam Egnot.

Exhibiting: "Huckbolt" fasteners, blind rivets, installation tools.

HUPP CORP.—see TYPHOON AIR CONDITIONING CO.

HYDROTHERM, INC., Northvale, N. J.—Booths 826, 828

In attendance: J. F. Baier, W. F. Hosmer, H. D. Staman, E. C. Jackson, W. P. Weber.

Exhibiting: "Hydrotherm" and "Multi-Temp" gas fired hot water boilers, "Hydro-fin" baseboard, "Hydro-Vector" for heating and cooling.

I. C. E. D. CORP., P. O. Box 10515, St. Petersburg, Fla. — Booth S-92

ILG ELECTRIC VENTILATING CO., 2850 N. Pulaski Rd., Chicago 41, Ill.—Booths 517, 521

In attendance: J. J. Friedler, Jr., C. W. Dexter, G. C. Jelliffe, W. H. Rietz, C. E. Taylor, R. M. Groll, C. W. Stewart, J. O. Lennon, R. J. Kemly, C. F. Phillips, Jr., H. Darnall, W. T. Trowbridge, C. E. Brock, Jr.

Exhibiting: Power roof ventilators, centrifugal and propeller type; airfoil centrifugal fans; propeller fans; gas, steam, hot water and electric unit heaters; electric wall insert, baseboard and cabinet heaters, New wall insert and baseboard type electric heaters will be featured.

ILLINOIS ENGINEERING PRODUCTS—See AMERICAN AIR FILTER CO.

ILLINOIS TESTING LABORATORIES, INC., 420 N. LaSalle St., Chicago 10, Ill.—Booth 925

In attendance: W. J. Bailey, M. D. Carlson, D. S. Stuckey.

Exhibiting: Air velocity and temperature measuring and control instruments and dew point measuring apparatus. New "Alnor" air velocity transducer, providing a d-c millivolt output which is a function of the velocity (this output of millivolts making it practical to use any one of several continuous read-outs—indicating, recording, controlling, alarm) will be featured.

IMPERIAL BRASS MFG. CO., THE, 6300 W. Howard St., Chicago 48, Ill.—Booths 723, 725

In attendance: T. Byrnes, R. Burk, T. Durr, G. Duerr, C. H. Benson, K. Waugh, E. Raisl.

Exhibiting: Tube fittings in brass, steel, stainless steel and nylon, including "Hi-Seal," "Hi-Duty," "Ermeto," 45 and 37 deg flared, compression, "Poly-Flo," "Nylo-Seal," "Flex;" refrigeration valves, fluid control valves, high pressure—high temperature needle valves; tube cutters, flaring tools, tube benders, test plugs, reamers, pinch-off tools, swaging tools, refacing tools; pressure hose and couplings for low, medium and high pressure applications; refrigerant charging and testing units; other service tools. Production flaring tool, new refrigerant charging and testing unit, new charging hose, and new brass "Hi-Seal" fittings will be featured.

IMPERIAL DAMPER CO., 666 Edgecombe Ave., New York 32, N. Y.—Booth S-53

In attendance: Elliot Kahn, Mathew Kibrick, Gale Hendrichsen, Charles Whitehead.

Exhibiting: Volume dampers, automatic dampers, aluminum shutters, extruded aluminum louvers, fire dampers, convector enclosures, "Full Flo" grilles, "Meco" damper quadrants. Underwriter Laboratory approved fire damper will be featured.

INCINERATOR CORP. OF AMERICA, 33220 Lakeland Blvd., Eastlake, Ohio—Booth S-105

INDEPENDENT BLADE CO. DIV., WESTLUND INDUSTRIES, 533 Main St., East Haven 12, Conn.—Booth 322

In attendance: Ray Westlund, Jr., F. W. "Woody" Doten.

Exhibiting: Line of over 42 "Fit-Al" reciprocating saw blades designed to fit the major reciprocating saws on the market. Blades for cutting wood, metal, plaster and other materials will be shown. New heavy duty "Metal-Master" blades will be featured.

INDEPENDENT REGISTER CO., 3747 E. 93rd St., Cleveland 5, Ohio—Booth 701

In attendance: B. N. Richardson, K. B. Solberg, A. H. Ullman.

Exhibiting: "Iron Air" registers and grilles for warm air heating, ventilating and air conditioning.

INDUSTRIAL ACOUSTICS CO., INC., 341 Jackson Ave., New York 54, N. Y.—Booth 1009

In attendance: Martin Hirschorn, Joseph D. Placco, Jack Sidebottom, Archie Hawthorne, Charles Rink, Richard Heindel, Guy J. Sanders, George Sotos, Joseph Maniscalco, William Bohn, Seymour Wasserman, John Duda, Edward Farrar.

Exhibiting: "Conic-Flow" silencers for air handling systems, "Quiet-Duct" silencers for air conditioning applications, "Mod-U-size" silencers for "economy" or average jobs, "Quiet-Vent" silencers for doors, walls, and ceilings. "Conic-Flow" silencers will be demonstrated in an air handling system, showing the results visually and orally.

INDUSTRIAL COMBUSTION, INC., 4507 N. Oakland Ave., Milwaukee 11, Wisc.—Booth 55

In attendance: J. V. Resek, H. J. McCoy, Wm. J. DeMuth.

Exhibiting: Commercial-industrial burners; "Hev-E-Oil" burners for Nos. 4, 5, 6, or PS 300 oils; "Hev-E-Duty" power burners for natural or LP gas; combination models for gas with either light or heavy oil.

INDUSTRIAL PLASTIC FABRICATORS, INC., Endicott St. Norwood, Mass.—Booth S-58

In attendance: Paul R. Chamberlain, James P. O'Connor, Jr., Robert C. Bowker, Conrad R. Hoffman, E. Dane Nicolle.

Exhibiting: PVC and fiber glass centrifugal fans, PVC air washers, model PVC exhaust system. PVC fabricated and machined parts. Fiber glass centrifugal fan and PVC air washer will be featured.

INGERSOLL-RAND CO., 11 Broadway, New York 4, N. Y.—Booth 201

In attendance: W. J. Kearns, S. B. Wolfe, Jr., P. R. Griffin, W. P. VanEps, J. F. Claussen, H. L. Clarke, A. L. Keeler, W. M. Talbert, S. S. Orben, T. Bosshard, Jr., H. L. Kemp, Jr., R. J. O'Donnell, D. J. Kwederis, R. F. Minshall, A. T. Rodgers.

Exhibiting: Centrifugal pumps. New "K" line motor-pump, in 20 "off-the-shelf" sizes, for heads to 190 ft and volumes to 775 gpm, will be featured.

INSTO-GAS CORP., 998 E. Woodbridge Ave., Detroit 7, Mich.—Booth 338

In attendance: A. L. Wiener, William W. Steinert, J. J. Barrett.

Exhibiting: Torches, soldering iron torches and heaters, plumbers furnace, salamanders, infra-red heater, blower type heater. Improved blower heaters for portable heating will be featured.

INTERNATIONAL BASIC ECONOMY CORP.—see THE V. D. ANDERSON CO. DIV.

INTERNATIONAL HEATER CO., 101 Park Ave., Utica 2, N. Y.—Booth 1052

In attendance: A. I. Whiteley, I. C. Barber, C. H. Bremer, H. F. Randolph, Murray Wheeler, Millar Wheeler, W. L. Riehl, Allen Trask, W. W. Hutchinson, L. B. Sherry, C. H. Rockefeller, J. D. Bond, Neal Chandler, J. H. Kaley, M. N. Johnston, W. R. Landmesser, W. C. Meredith, C. T. Moyer.

Exhibiting: Gas and oil fired warm air units, summer cooling units, year 'round comfort units, heat pumps. New-air-to-air heat pump and expanded line of heating and cooling equipment will be featured.

IRON FIREMAN MFG. CO., 3170 W. 106th St., Cleveland 11, Ohio—Booth 835

In attendance: Hyter C. Hall, Howard M. Cutshaw, R. C. Wright, S. H. Kibbe, S. H. Beach, Harry C. Nye.

Exhibiting: First showing to trade of new series of lowboy oil furnaces "which feature controlled combustion, instant clean flame, and require only an exhaust vent"; commercial-industrial burners for natural or forced draft firing of oil, gas or dual fuel.

JACKES-EVANS MFG. CO., 4427 Geraldine, St. Louis 15, Mo.—Booth 1006

JACKSON & CHURCH DIV.—see YORK-SHIPLEY, INC.

JANITROL HEATING & AIR CONDITIONING DIV.—SURFACE COMBUSTION CORP., 400 Dublin Ave., Columbus 16, Ohio—Booth 934

In attendance: H. C. Gurney, C. C. Owen, L. J. Monahan, P. A. Ryan, R. E. Ireland, R. M. Johnke, G. Vanacore, H. E. Hicks, T. J. Burke, E. H. Lloyd.

Exhibiting: Winter air conditioners, year 'round air conditioners, duct furnace, suspended add-on air conditioners, condenser-compressor unit. New school heating, ventilating and cooling system will be featured.

JENKINS BROS., 100 Park Ave., New York 17, N. Y.—Booth 926

JENN AIR PRODUCTS CO., INC., 1102 Stadium Dr., Indianapolis 7, Ind.—Booth 47

In attendance: L. J. Jenn, H. J. Kennedy, Rex Welch, J. W. Schwier, Frank J. Gaither.

Exhibiting: Direct drive wall exhausters, direct drive roof exhausters, belt drive roof exhausters, relief vents.

JOHNS-MANVILLE, 22 E. 40th St., New York 16, N. Y.—Booth 702

In attendance: Representatives of Pipe Div., Industrial Insulation Div., and "Dutch Brand" Electrical Tape Div.

Exhibiting: "Transite" (asbestos-cement) gas vent, air duct, and vent pipe; "Aerotube" foamed plastic pipe insulation; "Spintex" insulation for air conditioning ducts; "Fibrocel" molded silica insulation; "Cerafelt" refractory-fiber felt insulation; "Spintex" blown insulation; "Dutch Brand" electrical tapes. New "Aerotube" foamed plastic insulation specially recommended by the manufacturer for bent tubing and fittings and with a "built-in" vapor barrier will be featured.

JOHNSON CO., S. T., 940 Arlington Ave., Oakland, Calif. and Church Rd., Bridgeport, Pa.—Booth 1095

In attendance: Dan Johnson, Al. Dimick, Wm. Trumbly, E. E. Jensen, Robert P. Johnston, Walter E. Lees, W. S. Harlacher, Sr., Frank Scalia, Ray Knapp.

Exhibiting: Oil burners, combination oil and gas burners, and featuring forced draft package units.

JOHNSON FURNACE CO., THE, 2129 W. 117th St., Cleveland 11, Ohio—Booth 1113

In attendance: Frank E. Johnson, James Crombie, Almon Chapin.

Exhibiting: Gas and oil fired warm air heating (residential).

JOHNSON SERVICE CO., 507 E. Michigan St., Milwaukee 1, Wisc.—Booths 23, 25, 27

In attendance: J. H. Mason, E. C. Doyle, J. H. Colby, P. D. Gayman, W. D. Hochuli, H. M. Rowe, M. M. Herrick, O. A. Star, E. A. Holford, K. A. Wright, E. J. McNally, S. H. Robbins, J. W. Morgan, W. C. Jones, W. G. Martin, E. E. Rogers, C. C. Chewning, F. L. Brengel, E. K. Schultz, W. W. Hill, S. T. Oliver, H. Hoffman, W. P. West, N. J. McGee, W. R. Hollett, J. Wheeler.

Exhibiting: Pneumatic automatic temperature and air conditioning control as applied to all types of heating, cooling, ventilating and industrial processing systems. Control centers and pneumatic transmission equipment will be featured.

JOURNAL OF PLUMBING, HEATING & AIR CONDITIONING, 92 Martling Ave., Tarrytown, N. Y.—Booth 715

Exhibiting: Publication.

JOY MFG. CO., Oliver Bldg., Pittsburgh 22, Pa.—Booth 1104

In attendance: L. G. Helmick, J. P. Cartwright, J. Y. Richards, P. W. Zilliacus.

Exhibiting: Controllable pitch axivane fan, adjustable pitch axivane fan, "Centrifoil" centrifugal blowers, Navy vaneaxial fans, aircraft and electronic fans, "Microdyne" dust collector.

KAISER CO., E. B., 2114 W. Lake Ave., Glenview, Ill.—Booth 140

In attendance: Edward B. Kaiser, Jr., E. W. Kaiser, Fred Loynd, Kenneth Johnson.

Exhibiting: Underground and overhead prefabricated insulated piping systems.

KAUSTINE FURNACE & TANK CORP., Perry, N. Y.—Booths 421, 423

KEENEY PUBLISHING CO., 6 N. Michigan Ave., Chicago 2, Ill.—Booth 709

In attendance: Chas. E. Price, Wallace J. Osborn, Robert A. Jack, C. M. Burnam Jr., James D. Thomas, George C. Cutler, Thomas V. Johnson, Robert W. Roose, Clyde Barnes, Robert J. Osborn, Tom Hughes, Donald T. Brickner, Richard G. Osborn, Donald Bahnfleth.

Exhibiting: "Heating, Piping & Air Conditioning"—for Consulting Engineers, Mechanical (Heating, Piping, and Air Conditioning) Contractors, Engineers in Industry and Large Buildings; "American Artisan" . . . The Magazine of Central Residential Air Conditioning, Warm Air Heating, and Sheet Metal Contracting; reprint books; market data; "Air Conditioning Newsletter."

KENNARD PRODUCTS—see AMERICAN AIR FILTER CO.

KEWANEE BOILER DIV.—see AMERICAN-STANDARD

KINGSTON CONLEY INC., North Plainfield, N. J. — Booth S-97

KOPPERS CO., INC., 200 Scott St., Baltimore 30, Md.—Booth 72

Exhibiting: "Aircoustat" sound traps. A "walk through" (giant) unit, which will demonstrate its principle, as well as other "live" displays of the product, will be featured.

KORFUND CO., INC., THE, 48-15 32nd Pl., Long Island City 1, N. Y.—Booth 1022

In attendance: S. Lee Perlow, Dick Kamholtz, Joe Gerbino.

Exhibiting: "Vibro-Isolators", "Vibro-Dampers", "Elasto-Rib", "Flex-Hose" flexible connections, vibration measuring instruments, and acoustical booths will be featured.

KOVEN & BROTHER, INC., L. O., 154 Ogden Ave., Jersey City 7, N. Y.—Booth 1016

In attendance: A. R. Hanson, E. K. Wodecka, W. Gray, E. Cancelosi, J. Savadove.

Exhibiting: Packaged units, oil and gas; gas and electric water heaters; oil fired hot water supply boiler; 275 gal, 10 year guarantee fuel oil tank.

KRITZER PRODUCTS, DIV. PEERLESS OF AMERICA, INC., 5800 N. Pulaski Rd., Chicago 46, Ill.—Booth 7

In attendance: R. W. Kritzer, M. W. Knight, J. M. O'Connor, Stephen F. Pasternak, Edward E. Garnaas, Henry Eric Theis, Robert M. Nelson.

Exhibiting: "Chill-A-Tron" water chillers; fan coil units for heating, cooling, and ventilating; "Combinex"; "Concealex"; "Glam-Air" grilles; controls. New "Syphon" heating and air conditioning equipment will be shown for the first time, and "Combinex" fan-coil unit that reverses air flow from heating to air conditioning "to take advantage of natural air currents" will be featured.

KRITZER RADIANT COILS, INC., 325 N. River St., Batavia, Ill.—Booth 832

KRUEGER AIR CONDITIONING CO., 19 E. Rillito, P. O. Box 5155, Tucson, Ariz.—Booths C-36, C-38

K S M PRODUCTS, INC., Merchantville 8, N. J.—Booth S-65

In attendance: Frank K. Kelemen, Anthony Maladra, Joseph Kelemen, John F. Ewert, William King, James Stevens, Walter Kiel, William Bodine, Penrose Reagan, L. P. English, Oscar Darlington, Claude Batuk, Charles P. Baker.

Exhibiting: Capacitor discharge stud welder, for end welding studs to light gage metals.

LAKE CHEMICAL CO. and MARKAL CO., 3052 W. Carroll Ave., Chicago 12, Ill.—Booth 1008

In attendance: C. Kleiman, Don Lytton, Dr. L. Aronberg, Mercer U. Ware, B. Lytton, Marvin Leffler, Ed Kunde, Ed O'Toole, Leo Halliwell, Hartwell B. Weeks, Jr., Robert M. Russell, Frederick L. Hill, Sam Wheeler, E. N. Wirthlin, Jr.

Exhibiting: "La-Co" fluxes, paste, stick liquid; sealants—paste and stick. "Markal Paintstiks," industrial markers; protective coatings for cooling towers, heat exchangers, humidifiers, and other air conditioning equipment.

LAU BLOWER CO., 2027 Home Ave., Dayton 7, Ohio—Booth 1044

In attendance: O. L. Raita, H. W. Faulkender, T. I. Byrd, W. W. Morrisey, W. H. Wentling, O. E. Blue, E. F. Humphrey, D. G. Jensen, W. J. Lohrey, G. B. Mergenthaler, C. C. Miley, H. Seebach, C. L. Sigman, J. B. Wallace, E. C. Wolford.

Exhibiting: Air conditioning and heating blowers and components.

LAWLER AUTOMATIC CONTROLS, INC., 453 N. MacQuesten Pkwy., Mt. Vernon, N. Y.—Booth 316

In attendance: J. R. Lawler, Jr., Adrian J. Meyers, Ray Smith, Jr., William F. Yarlett, Anthony T. Pennello

Exhibiting: Thermostatic temperature regulators and line of thermostatic control valves. New line of single seated, balanced, stainless steel trim, thermostatic temperature regulators will be featured.

LEHIGH FAN & BLOWER DIV., FULLER CO., Catasauqua, Pa.—Booth S-11

In attendance: L. J. Hersh, A. K. Dilliplaine.

Exhibiting: Induced draft fan (in operation).

LENNOX INDUSTRIES, INC., 1701 E. Euclid, Des Moines 5, Iowa—Booths 635, 639

In attendance: Ed Riggs, M. H. 'Bud' Stern, N. L. 'Norm' Rutgers, Ted Gilles, Bob Hasselbalch, Ernie King, Harold Yeazel, J. B. Franklin.

Exhibiting: Unit heaters (output 64,000 to 200,000 Btuh), duct heaters (output 96,000 to 336,000 Btuh), industrial heaters (output 400,000 to 2,000,000 Btuh), "Comfort Curtain" system of classroom heating and ventilating for one, two or any number of classrooms (bonnet output 64,000 Btuh and up.) New industrial heater will be featured.

LESLIE CO., 105 Delafield Ave., Lyndhurst, N. J.—Booths C-18, C-37

In attendance: R. W. Boettiger, Edwin Elliot, J. R. Bermingham, A. J. Dromm, H. A. Frederick, E. J. Killgore, James J. Lavin, Wm. F. Moffitt, James W. Killgore, Sr.

Exhibiting: Regulators, controllers, strainers —pressure reducing valves, temperature regulators, liquid level controllers, pressure controllers, temperature controllers, diaphragm control valves, operating and shut-off valves, self cleaning strainers, fluid control instruments. "Leslie-Topper" pressure reducing valve, start-up strainer, and diaphragm control valves for heating and air conditioning service will be featured.

LESLIE WELDING CO. INC., 2943 W. Carroll Ave., Chicago 12, Ill.—Booth C-40

In attendance: Carter H. Leslie, Roger D. McCutcheon.

Exhibiting: Rotary turbine ventilators in aluminum, copper and galvanized; stationary ventilators in the same metals; revolving head ventilators; anti-downdraft gas caps; chimney caps; louvers. The rotary turbine ventilator, recently redesigned for improved performance and modern appearance and available in most metals in sizes 6 through 30 in., and new anti-downdraft gas cap designed to improve flow of waste gases and prevent downdraft in gas chimneys, will be featured.

LEWIN-MATHES CO., DIV. OF CERRO DE PASCO CORP., 1111 Chouteau, St. Louis 2, Mo.—Booth 71

In attendance: Rod J. Lewin, Jerome J. Marx, Henry Stucke, Larry Fries, Edward F. Stanley, Carmen Milano, Frank Gorski, Gerald M. Agnew.

Exhibiting: Copper and brass tubing, copper and brass rod. A miniature draw bench showing how copper tubing is drawn, and a miniature coiler showing how copper tubing is coiled, will be displayed.

LIMA ELECTRIC MOTOR CO., INC., THE, Findlay Rd., Lima, Ohio—Booth C-117

In attendance: Patrick F. Dwyer, C. D. Bryan, John H. Tyma, Jack B. Hicks, Robert S. Feinberg

Exhibiting: Electric motors, gearmotors, pump motors, infinitely variable speed drives, gearshift drives. The variable speed drives and the gearmotors will be featured.

LIMA REGISTER CO., 1790 N. Cable Rd., Lima, Ohio—Booth 747

In attendance: N. F. Jones, C. B. Armour, J. L. Irvin, C. W. Bell, J. E. Hanger A. F. Jevons, C. E. Rink

Exhibiting: Registers, grilles, diffusers.

LOCKFORMER CO., THE, 4615 W. Roosevelt Rd., Chicago 50, Ill.—Booth 233

In attendance: G. W. Lamberson, W. M. Truska, Jr., E. C. Bill, John Davis, Leo Gale, Dick Linquist.

Exhibiting: "Lockformer" model 18; 20; "Super-speed" 20; 24 with power flanging attachment; "Cleatformer" standing "S" machine; "Lockformer Bett-Marr" band saws, models 24-S and 14 SM; "Easy Edger". The band saws will be publicly exhibited for the first time in a national show, and the speeded-up model 16 and 18 "Lockformer" will also be featured.

L.O.F. GLASS FIBERS CO., 1810 Madison Ave., Toledo, Ohio—Booth 748

In attendance: L. F. Scott, R. T. Bailiff, J. W. Hunter, J. D. Bettridge, G. C. Arnold, T. L. Carver, J. T. Gander.

Exhibiting: "Micro-LoK" pipe insulation, duct insulation, home insulation. Thermal and sound insulations will be demonstrated.

LYCOMING DIV., AVCO MFG. CORP.—see SPENCER HEATER

MAGNETROL, INC., 2110 S. Marshall Blvd., Chicago 23, Ill.—Booth 333

In attendance: Lester E. Stybr, Wm. A. Cannon, Jr., Richard J. Haupt, and others.

Exhibiting: Boiler water level controls (pump controls, high and low alarms, low water cut-offs); refrigeration controls; flow alarm switches; pump controls and alarms for tanks, sumps and pressure vessels. High pressure-high temperature controls; pump control for outdoor storage vessels subject to freezing conditions; and refrigeration control will be featured.

MAID-O'-MIST, INC., 3217 N. Pulaski Rd., Chicago 41, Ill.—Booth 648

In attendance: O. V. Wooley, H. J. Carr, I. A. Madden, J. L. Edgar, K. A. Hanson, J. Wm. Walter, F. G. French, R. W. Hall, H. T. Waterstraat, E. J. Busch, J. F. Templeton, J. O'Connor, J. McEntee, W. G. Mussun, E. E. Berthet, L. J. Rathbun, G. C.

Hench, F. M. Glisson, Robert Davis, H. E. Culley, L. E. Pelletier.

Exhibiting: "Auto-Vent" air eliminators and balancing valve adapters for hot water heating and chilled water cooling systems, float control valve, water level controls, saddle valves, needle valves, liquid and air strainers, automatic water feeders, humidifiers for warm air furnaces, humidifiers for hot water heating systems, humidifiers for steam heating systems, spray type humidifiers for commercial and industrial applications. New 150 psi and 30 psi automatic air vents for hot water heating and chilled water cooling systems, and new 1½ in. balancing valve adapter for hot water heating and chilled water cooling systems, will be featured.

MAJOR CONTROLS CO., P.O. Box 537, Corona, Calif.—Booth 630

In attendance: Walter Lee, Ward Travers.

Exhibiting: New improved regulator; combination control including manual valve, automatic valve, pressure regulator, safety pilot and optional modulation control; combination pressure regulator and manual valve; manual main shutoff valves.

MAMMOTH FURNACE CO., THE, 6425 Cambridge St., Minneapolis 26, Minn.—Booth 57

In attendance: Harold J. Collins, Dean C. Rupp, Ralph J. Scheu, Charles E. Nelson, Serge F. Kaufenberg.

Exhibiting: "Commercial-Aire" floor mounted heater for combination gas and light oil firing, equipped with 90 deg discharge heads, 1,000,000 Btu output; horizontal suspended heater for light oil firing, unit equipped with 45 deg discharge heads, 400,000 Btu output; inverted floor mounted heater for full modulation natural gas firing, unit with built in bypass section and flanged inlet and outlet duct connections, 400,000 Btu output; "Compacto" horizontal heater for light oil firing, 185,000 Btu ouput; floor mounted heater for natural gas firing, 225,000 Btu output. New line of "Compacto" heaters in sizes ranging from 185,000 to 450,000 Btu output, used in the floor mounted, horizontal or inverted positions and flexible in the adaptation with face and bypass systems and air conditioning systems to be used in heating small commercial and industrial type buildings will be introduced.

MARATHON ELECTRIC MFG. CORP. Randolph & Cherry, Wausau, Wisc.—Booth 30

In attendance: Rudy Salzman, Robert Caso, Wib Creelman, Art Roth, Steve Bucki, Harry Ellis, Lloyd Steinmetz, Jim Brower, Charles Crane, John Toto, Richard Smart, Paul Walsh, Bill Moody, Rod Pike, Jim Brown, Bill McCall, R. V. Jones, Paul Anklam, Rienk Andriessen, Robert Thomasgard, A. P. Sirois, Robert Geisel, Dick Frotton.

Exhibiting: Line of motors for heating and air conditioning from 1/20 to 3500 hp "in all types, all enclosures." Permanent split capacitor motors will be featured.

MARCO ELECTRIC MFG. CORP., Third & Franklin Sts., Womelsdorf, Pa.—Booth C-23

MARKAL CO.—see LAKE CHEMICAL CO.

MARLEY CO., THE, 222 W. Gregory Blvd., Kansas City 14, Mo.—Booth 74

MARLO COIL CO., 7100 S. Grand Ave., St. Louis 11, Mo.—Booth 139

In attendance: L. C. Pellegrini, V. Porta, F. G. Meyers, W. H. Frenger, R. W. Buss, J. H. McGivern, R. J. Cummins, H. J. Kipp, F. E. Ince.

Exhibiting: Remote room air conditioning units, central station air conditioning units, spray type dehumidifier, air dampers, finned coils. New single fan air conditioning unit (one of line of one, two and three fan air conditioning units) and new "Evntemp" steam distributing coil will be featured.

MARSH INSTRUMENT CO., Sales Affiliate of JAS. P. MARSH CORP., 3501 Howard St., Skokie, Ill.—Booth 714

In attendance: Bob Barnett, Don Warner, Ed Sloan, Jim Kelly, Bill Olk, Bob Ely, Bill Ensign, Dick Sweet.

Exhibiting: Pressure, compound and vacuum gages; dial thermometers; boiler gages; radiator valves and traps; float and thermostatic traps; float traps and other heating specialties; refrigeration gages and testing instruments; condenser water regulators; solenoid valves. New rigid stem and distant reading vapor tension dial thermometers for use in piping; new gas filled rigid stem and distant reading thermometers for use in ducts; new thermometers for hot water heating boilers; and new super-heat testing thermometers will be featured.

MASTER-CRAFT SUPPLY CO., INC., 118 E. Railroad Ave., W. Haverstraw, N. Y.—Booth S-14

In attendance: Howard Hurwitz, Murray Voroba.

Exhibiting: "Sootmaster" vacuum cleaners, dust bags and filter units, vacuum cleaner hose and attachments.

MAXITROL CO., 12200 Beech Rd., Detroit 39, Mich.—Booth 834

In attendance: Frank Kern, Jr., D. L. Zorn, Charles Stang, Jr., Robert T. Hlavin, Del V. Krieger, James L. Potter, Charles T. Burklow.

Exhibiting: Gas appliance pressure regulators.

McDONNELL & MILLER, INC., 3500 N. Spaulding Ave., Chicago 18, Ill.—Booth 540

In attendance: E. N. McDonnell, John James, Nils Swanson, George LaRoi, Leo Kmiecik, James Ramsay, Howard Peary, Richard Berry, John Dobise, Russ Evans, William Gleeson, Merrill Blankin, Joseph Ade, Donald Graig, Fred Dietz, F. A. Dockeray, Harry Erickson, Robert Finn, A. E. Kriebel, Jack Wynne, Jim Lavery.

Exhibiting: The exhibitor's line of safety devices for steam and water. New flow switches, with a complete demonstration unit, will be featured.

McGRAW-EDISON CO., COOLERATOR DIV., 704 N. Clark, Albion, Mich.—Booth C-122

McQUAY INC., 1600 Broadway, N. E. Minneapolis 13, Minn.—Booths 31, 33

In attendance: B. E. James, G. G. Workinger, H. B. Williams, W. B. Buck, A. R. Flynn, W. P. Peterson, J. W. McGuire, Oliver W. Kopp, Jr., Wm. Schrum.

Exhibiting: "Auditorium" ventilators; "Seasonmaker" air conditioners; unit heater line (downflow, horizontal, cabinet models); classroom ventilators; air cooled condensers (vertical air flow and low silhouette models); ½ in. booster coils; ¾, ⅞ and 1 in. tube coils; cleanable tube coil; stainless steel coils. The "Auditorium" ventilators, "Seasonmaker" line, new air cooled condenser line, and newly designed unit heater line will be featured.

MECHANICAL CONTRACTORS SUPPLY CO., INC., 277 Water St., New York 38, N. Y.—Booth S-53

In attendance: Charles P. Whitehead, G. A. Hendrickson.

Exhibiting: Fire dampers, grilles, damper regulators, louvers, shutters. Fire damper with UL label will be featured.

MEIER ELECTRIC & MACHINE CO., INC., 3525 E. Washington St., Indianapolis 7, Ind.—Booth S-107

In attendance: Carl W. Basey, John E. Watts, Joseph Miller, George Cranfill.

Exhibiting: Axial flow fan blades. New 22 in. through 30 in. diameter heavy duty blades, and new 4, 5, 8 and 10 blade condenser fan blade with slinger ring will be featured.

MERCOID CORP., THE, 4201 Belmont Ave., Chicago 41, Ill.—Booth 1019

In attendance: W. E. Jones, Val S. Krale, John S. Shedden, W. K. Stauffer, F. W. Ayer, Earle Sarson, R. Whiteford, R. Martinson, R. Green.

Exhibiting: Mercury switch equipped automatic controls. New low pressure control (diaphragm operated) and new explosion-proof pressure and temperature controls will be featured.

METALBESTOS DIV., WILLIAM WALLACE CO., P. O. 137, Belmont, Calif.—Booth 76

In attendance: Frank Kohles, Robert A. McHugh, Harold E. Sweatt, Charles Hallman, Norman D. Partridge.

Exhibiting: Gas vent pipe and fittings, all-fuel chimney. New "deluxe" chimney housing will be featured.

METAL MFG. CO., 114 N. W. 5th St., Fort Lauderdale, Fla.—Booth S-46

METALMASTER CORP., 66 Elm St., Newark 5, N. J.—Booth 244

In attendance: Eugene M. Peters, Sydney Cohen, Irving Suss, Alex Katz, Sidney Schwartz.

Exhibiting: Oil burners, hot water circulating pumps, bronze flow tees with copper insert, sump pumps, utility (laundry tray) pumps.

METALS & CONTROLS CORP., 34 Forest St., Attleboro, Mass.—Booth 77

MID-CONTINENT METAL PRODUCTS CO., 1960 N. Clybourn Ave., Chicago 14, Ill.—Booth 234

In attendance: C. F. Petersen, E. W. Haedike, George Walz, Paul Thompson, R. L. Clewell.

Exhibiting: "Lo-Blast" and "Economite" power gas burners, combination gas-oil burners, "Incinomite" burners for commercial incineration and fume removal. Newly designed 1959 "Lo-Blast" will be featured.

MILLER VALVE CO., INC., 1620 Pennsylvania Ave., Pittsburgh 33, Pa.—Booth 624

In attendance: Robert H. Miller, T. C. Miller.

Exhibiting: "Streamflow Silent" check valve and dashpot valve and parts.

MILWAUKEE VALVE CO., 2375 S. Burrell St., Milwaukee, Wisc.—Booth 1083

MINE SAFETY APPLIANCES CO., 201 N. Braddock Ave., Pittsburgh 8, Pa.—Booth C-61

In attendance: R. B. Evans, F. F. Bell, R. A. Bub, H. D. Edwards, V. J. Elliott, J. P. Sherwin, N. W. Hartz.

Exhibiting: New "Ultra-Aire" space filters, "M-S-A" micro-strain filters, "Air-O-Kay" filter, "M-S-A" compressed air ultra filters, being introduced for the first time.

MINNEAPOLIS-HONEYWELL REGULATOR CO., 2747 Fourth Ave., South, Minneapolis 8, Minn.—Residential Div., Booth 132; Commercial Div., Booths 225, 227, 231

In attendance: Commercial Div.: J. E. Haines, R. W. Crysler, V. D. Wissmiller, R. H. Jacobs, Charles Sanders, Jerome Cummiskey. Residential Div.: K. L. Wilson, K. W. Schick, T. A. Reed, H. W. Snyder, R. M. Locke, S. C. Marshall, L. C. McRoberts, T. G. Nelson, R. N. Keppel, H. O. Chamberlain.

Exhibiting: **Residential:** Line of residential heating and air conditioning thermostats and related control devices and small appliance and water heater controls; new thermostat that indicates when heating system filter is clogged. **Commercial:** New centralized control system for heating and air conditioning systems, new line of electronic air cleaners; line of heating, air conditioning and ventilating controls (electric, pneumatic, and electronic); building security systems; new master clock system and fire alarm detection system. Residential thermostat that indicates when heating system filter should be changed; new centralized control for heating and air conditioning systems in commercial buildings; and new line of electronic air cleaners will be featured.

MODINE MFG. CO., 1500 DeKoven Ave., Racine, Wisc.—Booths 526, 532

In attendance: M. J. Druse, A. J. Swartz, Owen Desmond, H. H. Clark, H. J. Clark.

Exhibiting: Unit heaters for use with steam, hot water and gas; convectors; cabinet units; heating and ventilating units; gas duct furnaces; air conditioners. Heating and ventilating unit and wall-to-wall convectors will be featured.

MONARCH MFG. WORKS, INC., 2501 E. Ontario St., Philadelphia 34, Pa.—Booth 810

In attendance: T. W. Murphy, Mrs. T. W. Murphy, E. B. Frame, Mrs. G. M. Frame, H. J. Hamilton, F. G. Schloz, W. H. Hulick, J. C. Underwood, F. S. Bartlett, C. E. Fink, Mrs. W. M. Fink, V. B. Kathe, Mrs. V. B. Kathe, E. S. Gallagher, R. F. Stone.

Exhibiting: Domestic and industrial oil burner nozzles, air mixing equipment for oil burners, pressure regulating valves, line strainers, and line of water spray nozzles.

MONOGRAM INDUSTRIES, INC., 825 S. Front St., Ouincy, Ill.—Booth 213

In attendance: Harold H. Fletcher, William E. Davis, Fred P. Newby, Herman D. Tow, Mitch Landau

Exhibiting: Gas and oil forced air furnaces — high boy, low boy, counterflow, 80,000 to 175,000 Btu; recessed oil and gas furnaces and vented recessed gas heaters.

MORRISON PRODUCTS, INC., 16816 Waterloo Rd., Cleveland 10, Ohio—Booth 947

In attendance: Thompson Morrison, Hunter Morrison, Jr., Peter Kardos, Charlie Koch, Charles Hanson, John N. Howlett, A. Galaba, W. Harry Tonner, Thomas Jennens, Terell Small, Stanley Morel, Don Allen.

Exhibiting: Line of air moving equipment for heating and air conditioning applications, including "Du-Air" control "for correct cfm automatically for both heating and cooling."

MORTON ENGINEERING SERVICE, PAUL S., 5131 Meadowlark Lane, P. O. Box 146, Kalamazoo, Mich.—Booth 743

In attendance: Paul S. Morton, Warren H. Carrington.

Exhibiting: New payroll tax calculator, interest calculator, new profit finder, calculators based on air change method (Btu calculator, area and volume calculator), calculators based on crackage method (Btuh calculator, area and crackage calculator), electrical heat load calculator reading in watts, air duct calculator.

MUELLER CLIMATROL, DIV. OF WORTHINGTON CORP., 2005 W. Oklahoma Ave., Milwaukee 1, Wisc.—Booths 102, 106, 108, 110

In attendance: H. P. Mueller, Sr., H. P. Mueller, Jr., D. Davidson, R. B. Schmidt, O. Ress, E. Hill, W. Sutherland, G. Hase

Exhibiting: Residential heating and air conditioning equipment, including unit heaters; gas and oil fired boilers; highboy, lowboy, horizontal, and counterflow gas and oil fired winter air conditioners; automatic electric humidifier; electronic air filter; coil-cabinet units; air handling unit; packaged summer air conditioner; air-to-air heat pump; remote air cooled condensing unit. The air-to-air heat pump, automatic electric humidifier, and packaged oil boiler will be featured.

MULTI-VENT DIV. OF THE PYLE-NATIONAL CO., 1334 N. Kostner Ave., Chicago 51, Ill. —Booths 822, 824

In attendance: C. W. Hammond, J. M. Johnsen.

Exhibiting: Low velocity air diffusers in modular, linear and unitary types, and troffer air-lighting unit.

NAPANEE IRON WORKS, LTD., Napanee, Ontario, Canada—Booth 343

NASH ENGINEERING CO., THE, South Norwalk, Conn.—Booth 400

Exhibiting: Actual demonstration of "an advanced concept for calculating pipe sizes on low pressure steam heating systems materially reducing the cost of installation". Also demonstrated will be a simplified outdoor control for vacuum heating systems which regulates the temperature and weight of steam according to weather conditions and is especially adapted to slab-on-grade construction. Line of heating pumps will be on display, including first showing of type CSI, as well as type CS condensation pumps not previously exhibited.

NATIONAL HEATER CO., INC., 2475 Doswell Ave., St. Paul 8, Minn.—Booth 401

In attendance: Geo. T. Costello, R. J. Crouse, K. G. Johnson, J. H. Nicklas.

Exhibiting: New 1959 models of all series of heating equipment manufactured by exhibitor, including new style, types and sizes of packaged warm air space heaters in capacities from 400,000 to 3,500,000 Btu output; stainless steel duct heaters; upright and counterflow heaters; suspended units. All heaters are suitable for oil, gas or combination gas and oil firing.

NATIONAL UNION ELECTRIC CORP.—see ARMSTRONG FURNACE CO. and WILLIAMS OIL-O-MATIC HEATING CO.

NATIONAL-U.S. RADIATOR CORP., DRAYER-HANSON DIV., Los Angeles, Calif.—Booth 600

NATIONAL-U.S. RADIATOR CORP., Heating & Air Conditioning Div., 221 Central Ave., Johnstown, Pa.—Booth 600

In attendance: T. B. Focke, R. W. Bolsinger, L. N. Hunter, L. L. Hotsenpiller, C. M. Baumgardner, F. S. Hudson, J. W. LeRoy, J. C. Haas, C. J. Philage, R. T. Walker, G. O. Gould, D. E. Welsh, H. L. Abel, Jr., A. C. Ball, R. R. Bruce, Jr., J. F. Canyock, E. M. Kastor, T. F. Walter, J. T. Obrig, J. T. Ray, E. C. Skari, J. F. Murphy, T. C. Lewis, H. F. Muth, G. G. Camas, F. Rubenkonig, R. K. Bales, Sam Yingst, E. Einersen, Walter Serafin, J. P. Conner, R. J. Smith.

Exhibiting: Heating and air conditioning products, packaged boiler, water chiller and fan coil unit, featuring new "Mark II Packet" all-in-one heating unit and hot water supply. An operating unit demonstrating heating and cooling can be operated and controlled by exposition visitors. Four moving panels will illustrate and describe typical heating-cooling systems for all structures. Exhibitor's Engineering Center will be shown.

NATIONAL-U.S. RADIATOR CORP.—also see PACIFIC STEEL BOILER DIV.

NELSON, HERMAN, PRODUCTS—see AMERICAN AIR FILTER CO.

NESBITT, INC., JOHN J., State Rd. & Rhawn St., Philadelphia 36, Pa.—Booth 1060

In attendance: A. J. Nesbitt, J. J. Nesbitt, Jr., W. D. Widerman, M. J. Murray, J. J. Merrick, W. D. McCloskey, H. B. Hedges, C. G. Knerr, D. McCurdy, E. A. Grostas, R. Wolf, K. W. Will, J. H. Smith.

Exhibiting: Classroom unit ventilators, classroom air conditioners, auditorium air conditioners, steam and hot water unit heaters, gas-fired unit heaters (propeller fan and blower fan), exhausters, cabinet heaters, cabinet conditioners, finned tube radiation. The classroom and auditorium air conditioners, the gas-fired unit heaters, and the cabinet conditioners will be featured.

NEW CASTLE PRODUCTS, INC.—see AIR DOOR INC.

NEW YORK BLOWER CO., THE, 32nd St. & Shields Ave., Chicago 16, Ill.—Booths C-126, C-130

In attendance: George A. Mathis, Earl E. Trickler, Bill Mathis, Bruce Shellstrom, John Kassel, C. J. Trickler, Cliff Culpepper.

Exhibiting: New packaged industrial fan, industrial type heating and ventilating units, heavy duty industrial centrifugal fans, line of distributor items.

NIAGARA BLOWER CO., 405 Lexington Ave., New York 17, N. Y.—Booth 1053

NIAGARA MACHINE & TOOL WKS., 683 Northland Ave., Buffalo 21, N.Y.—Booth 1048

In attendance: L. L. Hock, William Martin.

Exhibiting: Machines and tools for sheet metal forming and fabrication.

OHIO ELECTRIC MFG. CO., 5400 Dunham Rd., Maple Heights, Ohio.—Booth S-97

OLIN MATHIESON CHEMICAL CORP., WESTERN BRASS MILLS DIV., East Alton, Ill.—Booths 317, 321

OLIN MATHIESON CHEMICAL CORP., WINCHESTER-WESTERN DIV.—see RAMSET FASTENING SYSTEM

OLSEN MFG. CO., THE C. A., Elyria, Ohio—Booths 26, 28

In attendance: R. N. Campbell, Edward P. Hayes, A. J. Ritter, C. L. Grandstaff, E. G. Swain, J. S. Garber, E. J. Marre, J. P. Cullin.

Exhibiting: "Luxaire" gas fired winter air conditioners, oil fired winter air conditioners — upflow, counterflow, basement type and horizontal; combination year 'round air conditioners — air or water cooled, gas or oil fired; summer air conditioners — air cooled; blower-coil units; gas fired unit heaters; gas conversion burners. New 2, 3 and 5 hp air cooled condensing units with companion circular, plenum-type evaporator coils, duct-type evaporator coils and blower-coil units; and new factory assembled 175,000 and 200,000 Btu input gas fired winter air conditioners will be featured.

ORR & SEMBOWER, INC., Morgantown Rd., Reading, Pa.—Booth 938

In attendance: W. B. Firman, R. C. Currie, L. A. Roethe, P. E. O'Hora, W. P. Williams, R. C. Gray, V. N. DeCerchio, W. B. Myers, S. D. Distelhorst.

Exhibiting: "Powermaster" packaged automatic boilers, "O & S" fuel burning systems. Hot water boiler for forced circulation hot water heating systems will be featured.

OSTER MFG. CO., THE, E. 289th St., Wickliffe, Ohio—Booth S-24

In attendance: R. C. Chambers, G. A. Youngs, R. C. Baumgartner, H. B. Van Osten.

Exhibiting: Pipe and bolt threading machines and equipment, featuring "100" power drive.

OWENS-CORNING FIBERGLAS CORP., National Bank Bldg., Toledo 1, Ohio—Booth 1101

In attendance: G. W. Volckhausen, W. E. England, C. A. Brown, J. R. King, J. A. McKay, D. W. Ladd, R. L. Rosenfield, R. Adams, R. E. Naylor, H. T. Williams, A. W. Cox, G. K. Hammond, E. F. Burow, J. T. Englehardt, M. F. Hauserman, Jim Conway.

Exhibiting: "Fiberglas Dust-Stop" filter, commercial and industrial filter, bonded mat-faced filter, "Fiberglas" reinforced plastic hoods for power exhausters. New improved "Super Tough" duct insulation, mat faced flexible duct liner, large rigid duct insulation with embossed foil facing, "Fiberglas" round and rectangular duct systems, one-piece pipe covering with universal jacket, one-piece pipe covering with flame retardant jacket, flexible tubing insulation and adhesive, will be featured.

PABCO, 212 C.A.C. Bldg., Cleveland 15, Ohio —Booth S-3

PACIFIC STEEL BOILER DIV., NATIONAL-U.S. RADIATOR CORP., 944 Ash St., Johnstown, Pa.—Booth 210

In attendance: T. B. Focke, R. W. Bolsinger, C. M. Baumgardner, E. J. Grady, R. T. Walker, H. M. Gibb, George O. Gould, E. F. Hackett, Jack Lorenzen, Harry Mahnken, Edward Szatanski, R. B. Sweet, W. E. Everham, W. E. Lucas, Anthony Jenkins.

Exhibiting: Will show by means of translites and large blow-up photographs: Boiler-burner — steel — firetube, low pressure, heating, 15 psi steam, 30 psi water with horizontal rotary cup gas, oil, oil-gas burners for Scotch type boilers — range 59-650 hp. Pressure atomizing type burners for boilers — firebox and Scotch — range 370 to 6440 sq ft steam approx. Boilers — steel — firetube, low pressure, heating, 15 psi steam, 30 psi water. Range 370 — 71,420 sq ft steam-87,000 Btuh water, 11,427,500 Btuh water. Burners — horizontal rotary cup gas, oil, oil-gas and pressure atomizing. Coils-domestic water heating-instantaneous and tank type. Fans — draft inducers for boilers. Radiation — convection type-nonferrous convectors. Radiators — finned tube 1-1/4 and 2 in. with covers and accessories.

PARAGON ELECTRIC CO., 1600 Twelfth St., Two Rivers, Wisc.—Booth 646

In attendance: Tom Morrison, Tom Casey, Wayne Colvin, Fred Hansen, Henry Sobell.

Exhibiting: Timers for control of window air conditioner units, timers for commercial heating and air conditioning units, fan and ventilating time controls. Portable window air conditioner time switch, and flush mounted fan control, will be featured.

PATTERSON-KELLEY CO., INC., THE, 105 Warren St., East Stroudsburg, Pa.—Booth 809

PEERLESS OF AMERICA—see KRITZER PRODUCTS DIV.

PEERLESS ELECTRIC CO., THE, 1401 W. Market St., Warren, Ohio—Booth 543

Exhibiting: Commercial and industrial ventilating equipment, including fans, blowers, roof ventilators and air handling units. Low contour spun type roof ventilators and sectionalized heating and ventilating units will be featured.

PEERLESS HEATER CO., THE, Spring & Scheaffer, Boyertown, Pa.—Booth C-62

In attendance: R. G. Pinkerton, H. L. Hobert, H. B. Aldrich, E. W. Wilson, H. G. Miller.

Exhibiting: Cast iron gas and oil fired boilers, gas and oil fired warm air furnaces.

PEERLESS MFG. DIV. OF DOVER CORP. and DURA-VENT CORP., AFFILIATE OF PEERLESS MFG. DIV., 1400 W. Ormsby, Louisville 1, Ky.—Booth C-35

In attendance: Tom D. Bromley, Robert B. Stone, E. R. Webb, Hubert Byrd, M. L. Stork, Wm. H. Webster, Jr., Robert H. Mitchell.

Exhibiting: "Dura-Vent" gas vent pipe system and line of gas unit and console heaters. 1959 unit heater line will be introduced.

PENN BOILER & BURNER, 95 Empire St., Newark, N. J.—Booth S-57

PENN CONTROLS, INC., Goshen, Ind.—Booth 939

In attendance: Carlos Morgan, Philip Pestow, John McCaffrey, F. M. Halloran, K. W. Cash, Boyd Ralph, J. Corbett, R. H. Luscombe, F. X. Fessler, E. A. Price, Paul O. Penn, A. W. Barr, J. Garrett, George Sander.

Exhibiting: Automatic controls for heating, cooling and air conditioning. Hot water and warm air controls with new, improved switching mechanism will be featured.

PENNSYLVANIA FURNACE & IRON CO., Pine at Fourth, Warren, Pa.—Booth 806

In attendance: R. L. Blodgett, T. K. Stratton, C. S. Anderson, Orvel S. Snow.

Exhibiting: Gas fired boilers, gas fired furnaces; conversion burners, industrial conversion burners.

PENN VENTILATOR CO., INC., 3254 Goodman St., Philadelphia 40, Pa.—Booth S-23

In attendance: Barney Lipton, Robert Silver, Jay Surkin, Louis G. Malissa, Carl Malissa, Earle Fiigon, Harry Dischinger, Stanley Wojeck, Paul Orkline.

Exhibiting: "Domex" roof exhauster, turbine, "Aircap", "Royal", "Airette" gravity. Extruded aluminum "Sonotrol" curb and low contour "Dynafan" will be featured.

PERFECTION INDUSTRIES, DIV. OF HUPP CORP., 1135 Ivanhoe Rd., Cleveland 10, Ohio—Booth C-30

In attendance: C. W. Millsom, C. H. Strack, W. H. Smith, E. O. Butler, D. N. Gredys, A. B. MacLaren, Harold Dean, J. Platz, B. Grigsby.

Exhibiting: "World's Fair Winner" gas "Regulaire" furnaces, heat pumps, remote air conditioners. New oil furnaces and oil-gas wall furnaces will be featured.

PEROLIN CO., INC., THE, 350 Fifth Ave., New York 1, N. Y.—Booth C-57

In attendance: Bert V. Tiblin, Ken C. Gilmore, Ed R. Ebersole, Henry R. Strong.

Exhibiting: "Formet" water system treatment crystals for controlling corrosion and scale formation in condenser systems and domestic water supply systems; fuel oil treatment; "Pero-Nite" soot and fire scale remover; boiler feedwater treatments.

PETRO, 3170 W. 106th St., Cleveland 11, Ohio—Booth 75

In attendance: Robert Snyder, J. R. Crews, J. A. Hare, George Martinik, J. E. O'Donnell.

Exhibiting: First showing of new series of forced draft commercial burners for firing gas, oil, or dual fuel; direct oil fired water heater; line of burners for oil, gas or dual fuel firing.

PITTSBURGH PLATE GLASS CO., FIBER GLASS DIV., Pittsburgh 22, Pa.—Booths 642, 644

PLUMBING, HEATING, AIR CONDITIONING WHOLESALER, 92 Martling Ave., Tarrytown, N. Y.—Booth 715

PLUMBING AND HEATING BUSINESS, 130 E. 59th St., New York 22, N. Y.—Booth 302

Exhibiting: Publication.

POWER-FLAME DIV., INC., Grandview, Mo. —Booth 803

In attendance: R. W. Brown, Earl C. Thompson, Delbert Katherman, M. J. Murray, Chas. D. Jones.

Exhibiting: Power and atmospheric gas burners, "Combi-Matic" dual gas-oil burners. New power burner units for commercial and industrial applications will be featured.

POWER LINE FAN CO., 639 South Ave., Plainfield, N. J.—Booths 727, 729

In attendance: A. E. Ott.

Exhibiting: Propeller fans, roof ventilators, centrifugal exhausters.

POWERS REGULATOR CO., THE, 3400 Oakton St., Skokie, Ill.—Booth 601

In attendance: H. C. Mueller, K. M. Stevens, F. A. Murray, D. Ladd, G. E. Fickett, E. R. Bowman, C. A. Gustafson, W. Lehto, D. A. MacWatt, E. K. Wagner, H. Lundvall, G. M. Cox, I. H. Dale, R. Schoverling, M. Wenninger, R. DeWallace, T. J. Smith, A. H. Moraweck, A. M. Mulcahy, A. J. Keating, D. H. Thorburn.

Exhibiting: Pneumatic transmitters, pneumatic receiver controllers, constant volume regulators, packless control valves, electronic control systems, pneumatic power cylinders. "Series 200" temperature regulator that pneumatically controls air and liquid temperatures for industrial processes will be featured.

PRAT-DANIEL CORP.—see THERMOBLOC DIV.

PROX CO., INC., FRANK, 1201 S. First St., Terre Haute, Ind.—Booth 544

In attendance: F. P. Chelton, James F. McEntee, A. D. Parish, Carl Penningroth, Jr., I. B. Hutchison, J. J. Scanlin, Ralph Simmons, Robert F. Prox, Jr., C. R. Goodrich.

Exhibiting: Boiler.

PYLE-NATIONAL CO., THE—see MULTI-VENT DIV.

QUALITY SPECIALTY CO., INC., 28th St. & Lincoln Ave., Camden 5, N. J.—Booth C-52

In attendance: Carl Jay, Bernard Jay, Jules Jay, Thomos Gunning.

Exhibiting: Flow control valves, purge and balancing valves for hot water heating systems, combination flow control and air eliminator valves, flow control valves for side outlet boilers. Motorized valves for zoning heating systems, will be featured.

RADIANT UTILITIES CORP., 8817 18th Ave., Brooklyn 14, N. Y.—Booth 310

In attendance: Arthur A. Marcus, Frank G. Lowe.

Exhibiting: Oil burners, oil fired water heaters, sump pumps, laundry tray pumps, water conditioning equipment. The oil fired water heater will be featured.

RAMSET FASTENING SYSTEM, WINCHESTER-WESTERN DIV., OLIN MATHIESON CHEMICAL CORP., Cleveland 11, Ohio—Booth 1105

In attendance: J. N. Schwaller, A. T. Masters, D. W. Champlin.

Exhibiting: "Duo-Jobmaster" powder-actuated tools; "Flite-Chek" powder-actuated tools, "Shure-Set" hammer-in fastening tools; "Skrew-Set" sheet metal screw and adapter. The new sheet metal screw used in conjunction with "Shure-Set" tool and which can punch through thin metal and is turned in with the same tool, will be featured.

RANCO, INC., 601 W. 5th Ave., Columbus 1, Ohio—Booth 1065

In attendance; C. V. Haueisen, M. H. Reissig, L. D. Lamberson, M. S. Vidis, R. W. Bartholomew, R. E. Rees, James Manecke, B. H. Weber, C. S. Hickle, C. J. Hasbrook, W. H. Stanley, C. M. Spielman, Russell Kraft.

Exhibiting: Controls, with or without rotary circuit selector switches, for air conditioning, cooling and heating; new manual rotary multiple circuit selector switches; New DPST pressure controls for commercial applications; restrictor valves with "heat capillary tubing" for heat pump systems.

RANDALL GRAPHITE BEARINGS, INC., Greenlawn and Lake Sts., Lima, Ohio—Booths 342, 344

In attendance: Ray Chaney, Charles Esch, Jack Van Buskirk, Kenneth Harrod.

Exhibiting: Pillow blocks, bearing cartridges, safety collars, thrust washers, flange units, bearing brackets, graphited bearings, bronze bars, bronze bushings. New split sleeve bearing pillow block and new two-bolt, one-piece flange bearing will be featured.

RAWLPLUG CO., INC., THE, 200 Petersville Rd., New Rochelle, N. Y.—Booth S-66

In attendance: N. C. Macdonald, E. M. Simpson, E. Conklin.

Exhibiting: Masonry anchors and drills for anchoring air conditioning ducts and equipment to concrete and other masonry. Use of "Rawl-Drives", one-piece expansion bolts, will be demonstrated.

RAYPAK CO., INC., 2416 Chico Ave., El Monte, Calif.—Booth C-27

In attendance: Alfred Whittell, Jr., Byron Citron, Joe Heuer, D. Bushman.

Exhibiting: Gas fired copper tube hot water boilers, glass lined hot water storage tank and coil, swimming pool heaters. "Tri-Temp" system to provide water for space heating, sanitary rinse, and general purposes from a single gas fired boiler, designed for use by the food serving industry, will be introduced at this show.

RCS TOOL CORP., 227 E. Front, Bloomington, Ill.—Booth C-65

In attendance: T. M. Sweeney, J. A. Kinsella, H. G. Johnson, E. R. Myers, J. Chalas.

Exhibiting: Portable, all purpose, reciprocating saws for roughing-in work; "Super Saw" integral unit with self contained $\frac{1}{2}$ hp motor; new "Flush Cut" accessory unit for making cuts flush with any surface and reversible for right or left hand cuts; attachment for heavy duty electric drills; saw blades for reciprocating saws. "Flush Cut" accessory unit will be featured.

READING TUBE CORP., Empire State Bldg., New York 1, N. Y.—Booth 36

RECOLD CORP., 7250 E. Slauson Ave., Los Angeles 22, Calif.—Booth 20

In attendance: H. T. Jarvis, D. D. Wile, Sherman Singer, H. L. Quinn, W. L. Hilton, H. W. Jarvis, F. C. Hawk, H. H. Schellhas.

Exhibiting: 150 ton "Dri-Fan" evaporative condenser; 17,000 cfm high pressure air handling unit.

REDMOND CO., INC., SUBSIDIARY OF CONTROLS CO. OF AMERICA, 201 Monroe St., Owosso, Mich.—Booth 733

In attendance: Stanley Zolto, Richard Abrell, M. J. Koenig, J. W. Tweedy, R. Burns, H. Mulbar, E. Lindberg.

Exhibiting: Fractional horsepower electric motors and blowers and rotating electrical mechanisms.

REFRIGERATION and AIR-CONDITIONING BUSINESS, 812 Huron Rd., Cleveland 15, Ohio—Booth 437

Exhibiting: Publication.

RELIANCE ELECTRIC AND ENGINEERING CO., 24701 Euclid Ave., Cleveland 17, Ohio —Booth 1015

REMINGTON ARMS CO., INC., 939 Barnum Ave., Bridgeport 2, Conn.—Booth 847

In attendance: Web Kimmerle, Thomas Gorman, J. C. MacIntyre, C. J. Turner, G. P. Popp, T. E. O'Neill.

Exhibiting: Line of powder actuated tools, featuring new "Captive Stud" assembly.

RESEARCH PRODUCTS CORP., 1015 E. Washington Ave., Madison 10, Wisc.—Booth 218

In attendance: A. W. Brown, C. B. Rowe, J. G. Schutz, E. F. Rothe, D. O. Bender, P. N. Dutton.

Exhibiting: Domestic and industrial washable air filters, grease filters, domestic and industrial automatic electric humidifiers, paint arrestors, formed elements, dust and odor removal filter adhesives, evaporative cooler pads. Operating models of "Aprilaire" automatic electric humidifiers, odor removing "Super Filter Coat", and improved construction of grease, industrial and "E Z Kleen" air filters will be featured.

REVCOR, INC., 251 Edwards Ave., Carpentersville, Ill.—Booth 801

In attendance: J. F. Kochevar, J. H. Reichwein, R. F. McCall, M. J. Fabbri, A. Casadei, J. A. Jubell, D. H. Jubell, D. E. Arnold.

Exhibiting: "Blastaire" blower wheels, blower wheel housings, inlet rings, propeller fans.

RHEEM MFG. CO., HOME PRODUCTS DIV., 7600 S. Kedzie Ave., Chicago 29, Ill—Booth 1079

In attendance: R. B. Gilbert, J. F. Brownell, J. B. Meyer, R. C. Anderson, R. B. Faltermeier, R. J. Pierson, Jr., L. F. Nordgren.

Exhibiting: Gas and oil fired furnaces and boilers; residential air conditioning equipment.

RHEEM MFG. CO.—also see RICHMOND PLUMBING FIXTURES DIV.

RICHMOND ENGINEERING CO., 7th and Hospital Sts., Richmond 5, Va.—Booth S-7

RICHMOND PLUMBING FIXTURES DIV., RHEEM MFG. CO., P. O. Box 111, Metuchen, N. J.—Booth 1000

In attendance: R. H. Harris, M. H. Temple, G. B. Chandless, Jr., L. S. Maehling, M. J. Holmes, Jr., L. P. Jenkins, R. C. Shelton, H. Zeamer, C. T. Sullivan, D. D. Conover, M. J. Neary, S. J. Bondy, D. Tobin, A. E. Cohen, F. D. Confield, T. C. Gillen, L. Davidson, A. J. Rudolph.

Exhibiting: Gas and oil-fired boilers and warm air units for residential uses. Gas fired boiler and "deluxe" gas or oil fired furnace will be featured.

RIC-WIL INC., 24 Brown St., Barberton, Ohio — Booth 909

In attendance: H. S. Boring, E. Hall, W. F. Wood, E. L. Logrbrinck, V. Cotman, C. G. Van Schoor, E. S. Pandy, R. J. Ruschell, J. Easter

Exhibiting: Insulated pipe units, underground or overhead.

RIDGE TOOL CO., THE, 400 Clark St., Elyria, Ohio — Booths 722, 726

In attendance: Ralph Hamlin, Frank Zakary, Frank Ronan, George Joseph.

Exhibiting: Pipe wrenches, threaders, cutters, reamers, vises, power drives, pipe and bolt threading machines, "Ridgoil." New, light, heavy duty portable power drive available with full capacity $\frac{1}{8}$ to 2 in.; adjustable four sided wrench for use on hex, square and flat shapes; geared, jam-proof threader to handle pipe and conduit with one set of dies; new fast cutting tool for cutting copper tubing in close quarters; and top screw chain vise will be featured.

RITTLING CORP., THE, 831 Rittling Bldg., Buffalo, N. Y.—Booth C-31

In attendance: C. P. Rittling, J. B. Rittling, R. W. Rittling, R. J. Carter, G. S. McCarthy, K. King, N. T. O'Rourke, F. W. Helikson, P. J. Thompson, C. C. Ferris, T. Olesko, P. W. Fisher.

Exhibiting: Classroom unit ventilators, cabinet unit heaters, finned tube radiation, baseboard radiation, cabinet convectors, unit heaters, wall radiation, storage cabinets with heating units.

ROBERTS-GORDON APPLIANCE CORP., 44 Central Ave., Buffalo 6, N. Y. — Booth 618

In attendance: R. I. Warnecke, W. E. Davis, W. L. Wright, Jr., R. F. Palczynski, R. T. Huyck, R. J. Keller.

Exhibiting: Gas furnaces, gas boilers, gas conversion burners, gas industrial burners, gas lamps.

ROBERTSHAW-FULTON CONTROLS CO., FULTON SYLPHON DIV., P.O. Box 400, Knoxville, Tenn. — Booths 334, 336

In attendance: L. S. Dysart, A. W. Roat.

Exhibiting: Temperature controls, pressure controls, heating and ventilating controls, and automatic radiator valves.

ROBERTSHAW-FULTON CONTROLS CO. — also see GRAYSON CONTROLS DIV.

ROBERTSON CO., H.H., Farmers Bank Bldg., Pittsburgh 22, Pa. — Booth 1064

In attendance: D. G. Havlish, B. E. Curran, A. H. Sawyer, E. E. Pierce, Jr., T. J. Taylor, A. V. Dolan, H. V. Mount, H. L. McGrath, D. A. Carlson, R. E. Brooks, J. C. Waizenhofer, R. H. Kneale.

Exhibiting: "Q-Air" cells for distribution of air through cellular floors over beams, and "Aerator" thermostatically controlled mixing box which features automatic static pressure control plus a special seasonal change-over feature.

ROBVON BACKING RING CO., 675 Garden St., Elizabeth, N.J. — Booth S-108

In attendance: Mrs. D. A. Ahrens, John A. Sierra, Eugene P. Blewitt, Edward F. Bowden, George L. Lebret.

Exhibiting: Many types of backing rings, including commercial split backing ring and offset and machined rings, in various materials — carbon steel, stainless steel, chrome-moly alloys, aluminum, and cupronickel.

ROTHERM ENGINEERING CO., 7280 W. Devon Ave., Chicago 31, Ill. — Booth C-57A

In attendance: H. S. Kuhn, R. B. Borucki, Sam Lange, George E. Gibson.

Exhibiting: Revolving joints, expansion joints. Expansion joint with sight glass indicator, which enables operators of plants and machinery to check on condensate flowing, will be featured.

SARCO CO., INC., and SARCOTHERM CONTROLS, INC., 635 Madison Ave., New York 22, N.Y. — Booth 1012

In attendance: L. Barfus, T. R. Stevens, F. Watkins, S. Levin.

Exhibiting: Weather-compensating temperature controls, radiation, pumps, steam traps, and heating specialties (radiator valves, balancing fittings, strainers, radiator traps, air eliminators, etc.). Animated application display and operating pumps will be featured.

SCHECTER BROS. CO., Hancock & Huntingdon Sts., Philadelphia 33, Pa. — Booth 617

In attendance: Samuel Schecter, Morris Gross, Herbert First, Isadore Yasno, John Cascio, Larry Schecter, Walter Starr.

Exhibiting: Prefabricated duct, furnace pipe, perimeter (or warm air) pipe, ells. Several new fittings will be featured.

SCHEMENAUER MFG. CO., Kittle Rd., Holland, Ohio — Booth 19

In attendance: Harold Schemenauer, William Otto, Paul Minster, Marvin Fellner, Paul Holmes, C. Frederick Wachter.

Exhibiting: Unit ventilators and bookshelf radiation, auditorium unit ventilators, finned tube and commercial radiation. The auditorium unit ventilators will be featured.

SCHNACKE, INC., 1101 N. Governor, Evansville 7, Ind. — Booth S-17

In attendance: Frederick C. Schnacke, James K. Ellsworth, M. J. Barnett, Charles Lankford.

Exhibiting: Pictorial showing of compressors and condensing units, 5 to 75 hp; packaged liquid chillers, 10 to 300 hp; cooling towers, 3 to 60 tons. Packaged dual temperature unit chiller with boiler attached, 10 to 30 hp, will be featured.

SCULLY SIGNAL CO., 174 Green St., Melrose 76, Mass. — Booth 235

In attendance: Frank P. Scully, Robert G. Scully, Harold J. Forrest, Fred R. Ashmead, Frederic S. Bartlett.

Exhibiting: "Unifil" system, "Ventalarm" signal, "Ventalarm" combination gage, tank gage, safety vent cap, "Ventafil" portable fill, vent and signal, swivel, nozzle, "Scultrol" pump pressure control, "Throtlator" engine control, "Fasfill" connector, "Shurproof" tester, "Faslite" torch, electrode gage kit "Faylsafe" low-water cutoff, "Faylsafe" self-checking technique. "Faylsafe" low-water cutoff and "Faylsafe" self-checking technique will be featured.

SELCK & CO., WALTER E., 225 W. Hubbard St., Chicago 10, Ill. — Booth S-52

In attendance: R. J. O'Reilly, John McCaulley.

Exhibiting: New "Hudee Aire" automatic humidifier for forced warm air heating systems.

SENNA MFG. CO., N-732 Napa, Spokane 24, Wash. — Booth 340

In attendance: Irving R. Halsey, Sam Halsey, Ed Senna.

Exhibiting: Pipe bending equipment.

SENRAC INDUSTRIES, 1053 Applegate, Madison 4, Wisc. — Booth S-54

In attendance: W. R. Carnes.

Exhibiting: Louvers and dampers.

SHAW-PERKINS MFG. CO., 201 E. Carson St., Pittsburgh 19, Pa. — Booth 325

In attendance: Howard F. Brenholts, Fred N. McConnell, George P. Baker, Robert L. Tochio, Edward C. Davies.

Exhibiting: "Shaw Panel-Vectors" and "Perkins Air-adiators" for hot water and steam; room-heat distribution equipment for commercial, industrial, institutional, residential and marine use. High temperature water "Panel-Vector" will be featured.

SHENANGO REFRACTORIES, Box 120, New Castle, Pa. — Booth S-49

SKUTTLE MFG. CO., 150 Summit, Milford, Mich. — Booth 607

In attendance: R. W. Geisler, E. H. Haugen, Lou Roberts, K. M. Fournier, V. E. Devine, W. B. Stamberger, Jr.

Exhibiting: Automatic humidifiers for warm air heating systems, permanent washable electrostatic air filters, portable atomizing humidifiers for commercial and industrial application.

SLANT/FIN RADIATOR CORP., 130-15 89th Rd., Richmond Hill 18, N.Y. — Booth 129

In attendance: Al Buschel, Milton M. Brooks, Mel Dubin, Ralph Bautz, Herb Steiner, Thomas Urell, Robert Ross, Norman Stoll, Morty Pizer, John Darrison, Carl Fogel.

Exhibiting: Commercial finned-tube radiation, residential baseboard radiation, multi-apartment radiation, special process coils, electric heating equipment. The multi-apartment radiation and special process coils will be featured.

SMITH CO., INC., THE H.B., Westfield, Mass. —Booth 1074

In attendance: Weston B. Shepard.

Exhibiting: New "Mills" water tube cast iron sectional boiler; "Century" gas fired boiler for residences. The "Mills" water tube boiler specifically designed for modern oil and gas burners and for use in large buildings such as high schools, factories, office and commercial buildings, and other large structures, will be featured.

SPENCER HEATER, LYCOMING DIV., AVCO MFG. CORP., 652 Oliver St., Williamsport, Pa. — Booth 732

In attendance: E. I. Boardman, R. R. Adams, C. W. Shaffer, K. E. Schooley, C. R. Miller, L. B. Gorman, H. J. Fick, D. M. Guano, D. Reinhardsen, N. M. Cott, J. L. Pinter, E. L. Mahl, J. W. Fink, H. C. Crisman.

Exhibiting: Divided low waterline boiler, oil fired package unit, oil and gas fired residential package unit.

SPORLAN VALVE CO., 7525 Sussex Ave., St. Louis 17, Mo. — Booth 52

In attendance: H. F. Spoehrer, W. F. Wischmeyer, W. H. Krack, J. E. Dannels, J. T. Barry, E. C. Fockler, C. C. Grote, F. G. Jaeger, D. M. Lawson, J. J. Mays, P. J. McCarty, R. H. Parlin, W. S. Reichenbach, D. B. Rentschler.

Exhibiting: Thermostatic expansion valves, refrigerant distributors, solenoid valves, "Catch-All" filter-driers, "See-All" moisture and liquid indicator.

SPRAGUE ELECTRIC CO., North Adams, Mass. — Booth 1107

SPRAYING SYSTEMS CO., 3201 Randolph St., Bellwood, Ill. — Booth 208

In attendance: C. E. Patterson, Jr., John R. Lawrence, E. I. Pfaff, C. A. Harry, Jr., J. Pelej.

Exhibiting: Standard nozzles and accessories used in air conditioning, heating and ventilating for humidifying, evaporative condensers, air washers, spray ponds, cooling towers, and roof cooling installations.

SQUARE D CO., 4041 N. Richards, Milwaukee 12, Wisc. — Booth 605

In attendance: W. E. Helle, L. M. Maresh, J. B. Schifflin, A. H. Kranzush.

Exhibiting: Electrical distribution equipment, safety switches, electrical control equipment, magnetic starters, manual starters, pushbuttons, pump control. Melting alloy overload relay and mechanical alternator action demonstrator will be featured.

STANDARD STAMPING & PERFORATING CO., 3131 W. 49th Pl., Chicago 32, Ill. — Booth 632

Exhibiting: Registers and grilles.

STAR EXPANSION, P. O. Box 108, Mountainville, N.Y. — Booth C-25

STA-RITE PRODUCTS, INC., 234 S. Eighth St., Delavan, Wisc. — Booth 441

In attendance: R. H. Olson, H. R. Schanck, J. S. Petrolino.

Exhibiting: Centrifugal pumps for air conditioning applications.

STEINEN MFG. CO., WM., HEATING PRODUCTS DIV., 43 Bruen St., Newark 5, N. J. — Booth 744

In attendance: Wm. F. Steinen, Robert W. Hundley, Chris Jensen, Dave Nelson, Joseph J. Stocki, Olin Friant.

Exhibiting: Commercial and residential draft regulators, oil burner nozzles, electrodes, flame mirrors, adapters, etc. Incinerator draft regulator will be featured.

STEINEN MFG. CO., WM., INDUSTRIAL NOZZLE DIV., 43 Bruen St., Newark 5, N. J. — Booth S-18

In attendance: Wm. F. Steinen, Robert W. Hundley, Chris Jensen, Dave Nelson, Joseph J. Stocki, Olin Friant.

Exhibiting: Representative line of industrial spray nozzles. New "Span-Jet" industrial spray nozzle will be featured.

STEPHENS-ADAMSON MFG. CO., Ridgeway Ave., Aurora, Ill. — Booth C-60

Exhibiting: "Sealmaster" bearings and "Spherco" bearings.

STEWART*HALL CHEMICAL CORP., P. O. Box 66, Fleetwood Sta., Mt. Vernon, N.Y. — Booth S-64

In attendance: L. D. Miller, H. H. Hessel, Dave Bleiberg, Sy Stickle, Joe Miller, Dick Eskay.

Exhibiting: "Sootspray," "Odorgon," "Steamaster" tablets, "Tanklife" tablets, "Desludgit," "Sludgemaster," "End O'Soot," "Pow-A-Kit," "Sealmaster," "Surgemaster," "Petromiser."

STEWART-WARNER CORP., Htg. & Air Cond. Div., Lebanon, Ind. — Booths 814, 913

In attendance: William Judd, Walter Blake, Ray DeVaney, Norman Gill, Maurice Smith, Bob Semans, Larry Grant, Wes Stevenson, Gus Wolf.

Exhibiting: Line of gas and oil furnaces and boilers and air conditioning equipment.

STODDARD INDUSTRIES, INC., 1545 Kingsbury St., Chicago, Ill. — Booth 548

In attendance: Geo. H. Cantrell, L. M. Lamberton, and others.

Exhibiting: "Dust-magnet" washable, plastic air filter.

STURTEVANT DIV. — see WESTINGHOUSE ELECTRIC CORP.

SUNDSTRAND HYDRAULIC DIV., 2210 Harrison Ave., Rockford, Ill. — Booth 736

In attendance: B. F. Olson, L. H. Schuette, A. H. Swenson, C. W. Lang, J. F. Griffey, R. E. Stevens, B. L. Douglass, J. F. Nelson, B. L. Soderberg, S. A. Ferraro, J. R. Holmin.

Exhibiting: Fuel units for oil burners; constant speed for truck refrigeration. Two stage fuel unit for burners firing up to 40 gph will be featured.

SUN-RAY BURNER MFG. CORP., 139-24 Queens Blvd., Jamaica 35, N.Y. — Booths 606, 608

In attendance: Gabe M. Marin, Alfred Metzger, Alfred Luft, Robert Adcock, Jack Maxwell, Martin Sones.

Exhibiting: Oil burners for Nos. 2, 4 and 5 fuel oil, capacity from 0.50 to 33 gal No. 2 oil and 3 to 25 gal Nos. 4 and 5 oil; automatic fuel supply pumps; domestic oil fired water heaters. Gun type oil burner converting Nos. 4 and 5 fuel oil "to burn as efficiently as No. 2 oil" will be featured.

SURFACE COMBUSTION CORP. — see JANITROL HEATING & AIR CONDITIONING DIV.

SWARTWOUT CO., THE, 18511 Euclid Ave., Cleveland 12, Ohio — Booth 222

In attendance: G. V. Patterson, R. E. Parshall.

Exhibiting: Powered and gravity roof ventilators. New "Lite-'N-Aire" gravity roof ventilator and improved powered ventilators will be featured.

TACO HEATERS, INC., 1160 Cranston St., Cranston 9, R.I. — Booth 525

In attendance: Joseph Balter, Vincent F. Callahan, Albert B. Higgins, John Mitchell, Emmett Pollenz, Peter L. Quattrochi, Alton P. Dieffenbach, Hubert A. Essley, William W. Wexler, Henry Lisowski, Charles M. Sliney, William P. Haney, Walter T. Robinson, Wallace E. Johnson, Emilio Stocklin, Joseph R. Murphy.

Exhibiting: "Perfecta" pump, circulators, tankless heater, close-coupled and base-mounted pumps, "Air-Scoop," centrifugal pump, heat exchanger, "Taco-vents" and steam air valves. New close-coupled pumps and base-mounted pumps, and "Perfecta" pump, will be featured.

TECUMSEH PRODUCTS CO., Tecumseh, Mich. — Booth 1038

In attendance: A. S. Russell, D. J. Bowen, P. G. Colgrove, H. M. Kelso, G. I. Boone, V. A. Wilkinson, L. J. Freitas, R. B. Grisbrook, J. A. McLaren, J. E. Parker, M. A. Shantz, R. T. Smith.

Exhibiting: Line of air conditioning compressors from ½ to 2 hp for window cooler applications, from 1 to 5 hp for heat pump applications, and from 1 to 5 hp for year around air conditioning applications. New pancake type room air conditioning compressors from ½ to 1 hp, and new electrical features for various models of year around air conditioning and heat pump line will be featured.

TEMCO, INC., 4101 Charlotte Ave., Nashville 9, Tenn. — Booth 703

In attendance: F. Donald Hart, Cecil B. Oakley, Lee W. Rasch, George Darche, W. T. Brent.

Exhibiting: Traveling displays with continuous slides and audio, illustrating each type of equipment in line of gas heating equipment.

THATCHER FURNACE CO., Center Street, Garwood, N.J. — Booths 6, 8

In attendance: Carl Sahler, R. M. Cook, S. B. Leigh, Ira Vail, T. M. Gallagher.

Exhibiting: Complete new oil and gas fired warm air heating line, new series of packaged heating boilers.

THERMAC CO., 14296 E. 6th St., Corona, Calif. — Booth S-91

THERMAL ENGINEERING CORP., P. O. Box 13254, Houston 19, Tex. — Booth 16

THERMO-BASE DIV., GERWIN INDUSTRIES, INC., 214 Spring St., Michigan City, Ind. — Booth C-20

In attendance: Louis C. Cotts, Richard Cullom, Dan Lynch, A. L. Yeager.

Exhibiting: Perimeter air distribution system.

THERMOBLOC DIV., PRAT-DANIEL CORP., 2 Meadow St., So. Norwalk, Conn. — Booth C-158

In attendance: R. F. Sharon, J. W. Adams, Harry G. Mitchell, T. K. Lau, K. O. Kirkbride, Sr., J. O. Kirkbride, Jr., H. M. Parent, Ralph Mizener.

Exhibiting: "Panelbloc" and "Thermobloc." Adaptation of "Panelbloc" to have hooded unit for high bay installations, new model "Thermoblocs" designed from 500,000 — 2,000,000 Btu per hour, and operating hooded "Panelbloc" will be featured.

THERMO-PAK BOILERS, INC., 404 S. Palm Ave., Alhambra, Calif. — Booth S-111

THERMOWHEEL, INC., 10-10 50th Ave., Long Island City 1, N. Y. — Booth S-98

THRUSH AND CO., H.A., W. 8th at N. Jefferson St., Peru, Ind. — Booth 1014

In attendance: George H. Fox, E. D. Noland, Jerry T. Thompson, Normand Picard, L. D. Grose, W. J. Johnson, R. E. Clegg, T. E. Fahy, John T. Goosetrey, Jr., R. E. Lund, Frank B. Sweeney, Jr.

Exhibiting: Line of hot water heating specialties.

TITUS MFG. CORP., P. O. Box 810, Waterloo, Iowa — Booth 200

In attendance: Donald L. Titus, Robert W. Titus, J. S. Smith, J. D. Davis, Robert E. Wirth, Frank J. Coates, E. F. Averill, Bert Yockey, Jr.

Exhibiting: Air distribution products, ceiling diffusers, sidewall registers and grilles, linear type diffusing grilles, baseboard perimeter diffusers. A new product for distribution of room air "of particular interest from the architectural standpoint" will be demonstrated.

TITUSVILLE IRON WORKS CO., THE, S. Franklin, Titusville, Pa. — Booth. 901

In attendance: J. F. Sweeney, D. P. Edwards, S. D. Johnson, J. L. Dowd, K. J. Howard, A. E. Jennings.

Exhibiting: New three-pass complete wet back Scotch marine boiler, along with water tube package steam generator. The new three-pass unit, which features a rear combustion chamber of water cooled design, to eliminate refractory in combustion chamber and is manufactured in both low pressure and high pressure series, will be featured.

TORIDHEET DIV.-CLEVELAND STEEL PRODUCTS CORP., 16025 Brookpark Rd., Cleveland 35, Ohio — Booths 32, 34

In attendance: R. J. Lucas, W. E. Haynes, D. W. Rouse, Leslie D. Clough, Werner Hafer.

Exhibiting: Wall flame lo-hiboy, basement unit, gun-fired lo-hiboy, gas lo-hiboy, wall flame water heater, gun packaged boiler, conversion burners (wall flame, gun, gas). A series of completely packaged gun-fired steel boilers in three capacities will be announced.

TORRINGTON MFG. CO., THE, 70 Franklin St., Torrington, Conn. — Booths 708, 710

TRANE CO., THE, La Crosse, Wisc. — Booths 902, 906, 910, 918

In attendance: Lew Fuller, Milt Hoglund, Richard Lubinsky, Ralph Lee, Harry Case, Vern Bushnell, Bill Barnard, Harry Griese, W. Wassmandorf, Ed Daniel, Ted Ernst, Paul Hughes, Wes Wright, Kenneth Darmour, Pat Wasserman, Lloyd Eater, Richard Stamm, Bill Ferguson, Bill Lindsay, Donald Reed, G. Van Steenbergh, Fred Taylor.

Exhibiting: Centrifugal and axial flow roof ventilators, seven different convector models, wall fin, baseboard, unit heaters, "Torrivent" big volume heaters, "Uni-Trane" line, unit ventilator, "Climate Changer" air handling units, coil display, line of residential heating and cooling equipment, New turbine "CenTraVac", new open compressor line, new residential furnaces (oil fired), new air cooled condensers, new "Cold Generator" water chiller, new steam specialties, and new side wall diffuser will be featured.

TRERICE CO., H. O., 1420 W. Lafayette Blvd., Detroit 16, Mich. — Booth S-5

TRION, INC., 1000 Island Ave., McKees Rocks, Pa. — Booth 60

In attendance: E. W. Meyers, Jr., R. R. Pryor, C. S. Stephens, W. R. Murdock, R. H. Soderberg, W. F. Watson, J. W. Hall, Jr., F. E. Brown, W. F. Trondle.

Exhibiting: Electronic air cleaners, featuring new units of "stack-up" construction to simplify installation. The exhibitor's Mobile Clean Air Laboratory will be on display to demonstrate methods of determining air filter efficiencies.

TUBE MANIFOLD CORP., 415 Bryant St., North Tonawanda, N. Y. — Booth 807

Exhibiting: Receivers and filter-driers. New filter-drier "smaller than a golf ball" will be featured.

TUTTLE & BAILEY DIV. OF ALLIED THERMAL CORP., New Britain, Conn. — Booth C-15

XXTH CENTURY HEATING & VENTILATING CO., 96 Ira Ave., Akron, Ohio — Booth 207

In attendance: J. Garver Kerch, John G. Kerch, Jr., Walter H. Stashkiw, Roger Schaich.

Exhibiting: "Zeph-air"; cast iron gas, oil, and coal furnaces; air conditioning.

TYPHOON AIR CONDITIONING CO., DIV. OF HUPP CORP., 505 Carroll St., Brooklyn 15, N. Y. — Booth 301

In attendance: Don V. Petrone, John A. Gilbreath, Murray M. Kabili, Ira Rothfrab, Arthur H. Farr, Larry D. Spence, David P. Haring, Maurice T. Firestone, Edmund G. Seergy, Seynour H. Jarcho, A. G. Masiello, Norman A. Mandes.

Exhibiting: Packaged air conditioners, 3-75 tons; air cooled condensing units, 2-20 tons; self contained packaged heat pumps; ceiling mounted units, 5 and 8 tons; low side units, 2-20 tons; furnaces up to 250,000 Btu. Newly styled packaged equipment, large tonnage packaged units (75 tons), low silhouette ceiling mounted unit, and "Weather-Selector" air conditioner furnaces of "living room design" will be featured.

UNITED SHEET METAL CO., INC., 540 S. Drexel Ave., Columbus 9, Ohio — Booths 818, 820

In attendance: Maurice G. Lautenslager, J. D. McGill, W. M. Harmon, Evan Lilygren, Richard A. Chesrown.

Exhibiting: Spiral pipe and fittings; sound absorbers.

UNITED STATES AIR CONDITIONING CORP., P. O. Box 360, Delaware, Ohio — Booth 240

In attendance: G. W. Way, William Moiselle, R. D. McLain, Wayne Timby, W. W. Malloy, Boris Kaufman, Herman Fessler.

Exhibiting: Individual room heating and cooling unit ("Modu-Aire"), air-cooled condensing unit ("Kooler-Aire"), packaged air conditioner ("Package-Aire").

UNITED STATES REGISTER CO., 344 E. Burnham St., Battle Creek, Mich. — Booth 713

In attendance: C. J. Pearson, A. A. Stagg, E. P. Kromdyk.

Exhibiting: Air conditioning registers, vents and grilles; gravity registers and faces; ventilating grilles; diffusers; intakes; exhaust fan dampers; back pressure dampers. New base intakes, round ceiling diffusers, round ceiling dampers, round ceiling frames, square ceiling diffusers, square ceiling dampers, and square ceiling frames will be featured.

UNIVERSAL DIFFUSER CORP., 38 Marbledale Rd., Tuckahoe, N. Y. — Booth 17

In attendance: Charles Davies, Jack Brown, William Goffman, Marc Sheffler, Hal Margolies.

Exhibiting: Air diffusers, registers and grilles.

UNIVERSAL DYNAMICS CORP., Box 9814, Arlington 9, Va. — Booth C-56

VALLEY ENGINEERING CO., 221 W. Glenside Ave., Glenside, Pa. — Booth S-51

VALVEBLOWER CO. OF CALIFORNIA — see AIRFLOOR CO. OF CALIFORNIA

VAN-PACKER CO., DIV. OF THE FLINTKOTE CO., 1232 McKinley Ave., Chicago Heights, Ill. — Booth 739

In attendance: O. E. Collins, W. C. Henson, L. J. Gill, T. H. McMahon, C. M. Montgomery, E. D. Saver.

Exhibiting: All fuel chimney, industrial smoke stack, and metal gas vent (which will be featured).

VAPOR HEATING CORP., 80 E. Jackson Blvd., Chicago 4, Ill. — Booth C-156

In attendance: L. A. DiLucchio, D. W. Bucholz, James Murray, F. E. Hess, J. A. Marquez, J. H. Paulding, J. T. Elwood, R. R. Paget, A. W. Krier.

Exhibiting: New line of drum "Modulatic" boilers (introduced during summer of '58), sized from 20 to 200 bhp, a 20 bhp and a 100 bhp boiler being included at the exhibit; photo murals of boiler rooms; operating schematics to show the operating principles.

VELOCITY POWER TOOL CO., N. Braddock Ave., Pittsburgh 8, Pa. — Booth 14

In attendance: William G. Kulesz, R. V. Ferrari, M. D. Stemple.

Exhibiting: "Lawco" portable pipe threader, stud driver, stud hammer, air acetylene "Torch-o-Matic." New "Green Hornet" stud driver will be featured.

V. & E. PRODUCTS, INC., Schuylkill Haven, Pa. — Booth C-22

In attendance: Robert Reidel, Dick Snyder, Jos. H. Eubanks.

Exhibiting: Oil boiler units, gas boiler units, coal boiler units.

VIBRATION ELIMINATOR CO., THE, 10-28 47th Ave., Long Island City 1, N.Y. — Booth C-42

In attendance: M. E. Miller, S. Kahn, R. Wettingfeld, F. Dean, G. Hommel, H. Orlandi.

Exhibiting: Rubber-in-shear and spring vibration eliminator mounts for floor mounting and ceiling suspending air handling equipment.

VIBRATION MOUNTINGS, INC., 98-25 50th Ave., Corona 68, N. Y. — Booth 347

In attendance: B. A. Ross, Jack Spachner, Harold Harris, Tony Slota, Joe Leak, Richard Batherman, T. N. Tway.

Exhibiting: Vibration control and noise absorbing mountings and pads utilizing steel springs, cork, neoprene-in-shear, and combinations of these materials.

VICTAULIC CO. OF AMERICA, P. O. Box 509, Elizabeth, N. J. — Booth 18

In attendance: R. W. English, J. E. St. Clair, F. X Costanzo, J. J. O'Brien, T. A. Rehmann, R. J. Schickel.

Exhibiting: Pipe couplings for quick connecting plain end, cast iron and aluminum pipe; stainless steel, plastic, plastic-lined, aluminum and rubber-lined pipe fittings; grooving tools; plug valves. "Vic-Easy" method of jointing light wall pipe or tubing, and stainless steel and plastic fittings for corrosive services will be featured.

VIKING AIR PRODUCTS, 5601 Walworth Ave., Cleveland 2, Ohio — Booth 402

In attendance: David J. Ahern, Maurice H. Esser, Bernard Trautman, T. J. McIntyre, S. B. Faison, W. L. Siebenthaler, Clifford Woodruff, M. F. Mackenzie, M. E. Kelley, Richard F. Gang, John A. Green, Robert V. Main, Marion I. Levy.

Exhibiting: Furnace and air conditioning blowers, blower packages, humidifiers, duct blowers, permanent air filters. Duct blower for cooling and heating, permanent air filters, and electric humidifier will be featured.

VILTER MFG. CO., THE, 2217 S. First St., Milwaukee 7, Wisc. — Booth S-28

In attendance: A. O. Vogel, M. F. Tokach, W. W. Fullerton.

Exhibiting: Newly designed six cylinder compressor unit, direct connected to 60 hp, 1750 rpm motor.

VOLCANO BURNER MFG. INC., 3612 E. Tremont Ave., New York 65, N. Y. — Booth 219

VULCAN RADIATOR CO., 775 Capitol Ave., Hartford 6, Conn. — Booth 1034

In attendance: Milton L. Lundgren, James W. Cira, Martin Trachtenburg, Walter T. Bell, Robert Sand, Jack Rita.

Exhibiting: Pinned tube radiation and enclosures for commercial, institutional and residential heating; schoolroom heating and ventilating systems; electric baseboard. "Linoventilator" schoolroom units, electric "Trimline" baseboard, heavy duty industrial baseboard, "Dura-Mount" panels, and new interlocking screwless flush joint for finned tube enclosures will be featured.

WAGNER ELECTRIC CORP., 6400 Plymouth Ave. St. Louis 14, Mo. — Booth 718

In attendance: A. C. Allen, M. B. Atkinson, A. H. Beasley, S. E. Bowers, B. L. Britt, P. M. Burgess, F. Cheney, L. C. Dobrunz, P. C. Ford, A. E. Frohardt, W. H. Gilster, R. W. Larson, D. L. Kearns, R. K. McLuen, C. M. Malanowski, F. B. Minx, L. A. Murphy, F. E. Myers, H. B. Nechemias, M. H. Nelson, P. M. Postlethwaite, G. H. Rentschler, P. F. Ryan, S. R. Snyder, J. J. Thomas, F. H. Vocks, L. M. Weltmer, C. E. Widell, H. Pillisch, W. L. Rohm.

Exhibiting: Various types of electric motors suitable for heating and air conditioning equipment.

WALKER MFG. & SALES CORP., 1711 Penn St., St. Joseph 1, Mo. — Booth 405

In attendance: Andrew H. Ziph, Raymond Denning, George Mitchell, Ed Colley, E. S. Cushing, B. W. Kirby, R. E. Michel, W. F. Barry, William H. Moore, James Connelly, F. Stewart Long, R. D. Bitzer, Carl J. Forve, Jack B. Blenk, Robert L. Bitzer, John H. Bitzer, Ed. T. Rothe, Howard Hooven, Jack R. Rott, Fred Spengler.

Exhibiting: Barometric draft controls, draft inducers and chimney caps. Display will feature domestic draft controls with non-sticking knife edge pivots and re-styled frame; draft inducers with extended size range to 20 in. smokepipe diameter; draft control specialty products for correction of low draft, downdraft, and excess draft conditions in combustion equipment.

WALLACE CO., WILLIAM — see METALBESTOS DIV.

WALTON LABORATORIES, INC., 1186 Grove St., Irvington 11, N. J. — Booths 634, 636

In attendance: William Feldermann, Jack B. Feldermann, Bob Lewis, George Lyons, Frank Hartwell, Al Janks, Tom Creigh.

Exhibiting: Humidifiers, humidity controls, indicators, demineralizers. New space humidification will be featured.

WARREN ENGINEERING CO., DIV. WARREN AUTOMATIC CONTROLS CORP., Route 24, Main St., Broadway, N. J. — Booth 443

In attendance: Thomas P. Bruno, Emil Jack Schryber, George E. Breece, Jr.

Exhibiting: Pressure reducing valve, temperature regulating valve, diaphragm control valve, strainers, gages, vacuum breakers, electric motorized valves, level controls and float valves, hydraulically operated controls, pressure relief valves, air eliminator. Diaphragm control valve with new finned bonnet, available with V-port, bevelled or flat disc in either stainless steel or bronze, body material available in semi-steel, bronze, cast steel, stainless steel, aluminum, ductile iron, will be featured.

WARREN REGISTER & GRILLE, INC., 3680 N.W. 50th St., Miami, Fla. — Booth S-45

WATERLOO REGISTER CO., INC., Waterloo, Iowa — Booth 602

In attendance: E. T. Kelly, R. E. Nemmers, J. M. Simatovich, J. M. Schaffer.

Exhibiting: Registers, grilles, door ventilators, volume extractors and controllers. Extruded aluminum "Airline" grilles will be featured.

WATERMAN-WATERBURY CO., THE, 1121 Jackson St., N. E., Minneapolis 13, Minn. — Booths 204, 206

In attendance: Ray J. Dervey, Thos. J. Delaney, Jr., Ira W. Metcalf, Roger Wharton, James Wilson, James Bazille, Lyle Groff, Ted J. Bujewski, Fritz Legler, Keith Anderson, James Weber.

Exhibiting: "Comfortrol," combination, face and bypass heating and cooling; gas fired sectional series, 80,000 Btu to 150,000 input; gas and oil fired equipment.

WATTS REGULATOR CO., 10 Embankment St., Lawrence, Mass. — Booth 813

In attendance: Geo. B. Horne, Robert H. Chaffee, Joseph F. Keegan, W. M. Dillon, Vernon R. Bitzer, William Schweiger.

Exhibiting: Boiler water feeder and low water cut-off; steam pressure and temperature regulators; tempering valves; ASME water relief valves; ASME-AGA self-closing temperature and pressure relief valves; water pressure reducing valves; strainers; feedwater pressure regulators.

WEATHERHEAD CO., THE, 128 W. Washington Blvd., Fort Wayne, Ind. — Booth S-104

In attendance: G. R. Anderson, A. S. Wade, E. M. Bartley, J. R. Holiger, T. J. Small, J. W. Maher, J. F. Gilliland, C. T. Craig, F. J. Bromilow.

Exhibiting: Flared and flareless tube fittings, hose ends, hose assemblies, receivers, driers, miscellaneous screw machine items, refrigeration valves, accumulators, controls, mufflers.

WEBSTER ELECTRIC CO., 1900 Clark St., Racine, Wisc. — Booth 705

In attendance: H. C. Stacey, W. E. Dent, L. S. Ehrich, W. J. Wenszell, J. A. Gleissner, J. Kralicek, P. Deuble, G. Brinkerhuff, T. Godburn, L. E. Woolf, P. Maurice, J. Engholt.

Exhibiting: "ServiceSaver" pump, ignition transformers.

WEBSTER & CO., WARREN, 17th & Federal Sts., Camden 5, N. J. — Booths 335, 339

In attendance: D. F. Bennett, N. W. MacNichol, J. J. Bubser, J. J. Poyatt, L. H. Plum, R. H. Hansen, I. G. Brennan, J. M. Wilson, D. K. Noble, A. N. Clark, C. R. Speck.

Exhibiting: "Newport" heating-cooling conditioners; "Riviera" heating-cooling conditioners; "Walvector," "Deluxe" and "Custom Walvector"; baseboard heating; steam specialties; unit heaters. The "Newport" heating-cooling conditioners and improved "Walvector" will be featured.

WEIL-McLAIN CO., Michigan City, Ind. — Booths 905, 907

In attendance: M. E. Mitchell, R. M. Stockwell, P. R. Stockwell, W. C. Kern, W. R. Stockwell, Jr.

Exhibiting: Commercial oil-fired boiler burner units, commercial gas-fired boilers, header, baseboard radiators.

WESTCOTT SNYDER MFG. CORP., 42 Park Ave., Madison, N. J. — Booth S-27

In attendance: R. B. Snyder, W. T. Westcott, Clarence Schmitz, S. S. Neide.

Exhibiting: Oil and gas fired boilers, baseboard radiation, fan-coil heating and cooling units.

WESTERN BRASS MILLS DIV., OLIN MATHIESON CHEMICAL CORP., East Alton, Ill. — Booths 317, 321

WESTINGHOUSE ELECTRIC CORP., P. O. Box 868, Pittsburgh 30, Pa. — Booths 1045 (Air Conditioning); 1031 (Sturtevant Div., Air Handling Equipment); 1099 (Motors and Control)

In attendance: J. W. Wilcock, P. Cohen, H. W. Rainey, A. Martin, R. H. Martin, T. J. Dermot Dunphy, D. R. Meckstroth, B. G. Lattimore, E. B. White, J. F. Farrell, C. R. Rhine, C. B. Jakes, N. R. Miller, C. E. Cannon, R. D. Hartsig, O. W. Harrison.

Exhibiting: Air conditioning products; air handling apparatus; electric motors and control for the heating, ventilating and air conditioning industry; airfoil centrifugal fan with vane control; removable header coil; air handling unit with in-line air cleaning section; industrial "Precipitron" with automatic cleaning cycle. An electronic computer "designed to measure the exact requirements for the proper air conditioning of space" will be on display.

WESTLUND INDUSTRIES — see INDEPENDENT BLADE CO.

WHEEL TRUEING TOOL CO., 3200 W. Davison Ave., Detroit 38, Mich. — Booth 734

In attendance: Karl J. Klapka, Nick Di Vincent, W. O'Grady, David S. Lubanko, A. H. Salter.

Exhibiting: "Truco" diamond drill bits, diamond drilling machines, diamond drill motors, swivels, water pickup, diamond drilling accessories. Model "G" diamond drilling machine will be featured.

WHITE-RODGERS CO., 1209 Cass Ave., St. Louis 6, Mo. — Booth 501

In attendance: R. A. Sherer, E. C. Robinson, Gerry Powell, Arnold Petersen, E. E. Harwood, R. Weber, E. Wechsler, P. Randall, E. Freitas, E. E. Harwood, III, Paul March, S. Zuckerkandel, J. Hare, J. Fry, J. McMullin, C. Garner, J. Atterbury, E. Claus, C. Rennecamp.

Exhibiting: Automatic controls for heating, refrigeration and air conditioning; featuring new control system for hot water zone control also adaptable to chilled water cooling systems. New "DeLuxe" series of electric heat thermostats, new "Silent Knight" line of gas valves, new "Lint Sentinel" non-aerated gas pilots, new zone control system, new "Direct-Lite" gas burner control system, and new automatic controls for post gas lights will be featured.

WIEGAND CO., EDWIN L., 7500 Thomas Blvd., Pittsburgh 8, Pa. — Booth 2

In attendance: William G. Potter, Robert L. Boyd, Ronald F. Faber, J. V. Calhoun.

Exhibiting: Line of heating and ventilating products using electricity for fuel, including unit ventilator, unit heaters, convectors, water heaters, snow melting cable, and radiant comfort heaters. Commercial electric cabinet convectors, commercial recess wall fan driven heater, improved electric unit ventilator, and heavy duty commercial electric baseboard will be featured.

WILLIAMS OIL-O-MATIC HEATING CO., DIV. OF NATIONAL UNION ELECTRIC CORP., 851 W. Third Ave., Columbus 8, Ohio. — Booth 502

In attendance: E. Dawkins, J. J. Curran, R. G. Watkins, W. W. Follett, C. M. Lane, L. E. Berghash.

Exhibiting: Oil and gas fired furnaces, oil burners, boilers, air conditioners (central-air cooled).

WINCHESTER-WESTERN DIV., OLIN MATHIESON CHEMICAL CORP. — see RAMSET FASTENING SYSTEM

WING MFG. CO., L. J., DIV. OF AERO SUPPLY MFG. CO., North Stiles St., Linden, N. J. — Booth 114

In attendance: J. L. Spencer, C. H. Smith, G. Nash, R. Teller, T. Harden, W. Matiez, L. Froehlich, A. Hansen, C. Kjellberge, R. N. Hosey, J. Hayes, J. F. Guest, G. Bleckner, R. J. McCory, Jr., G. M. Comstock, D. Bachman, A. Stellingworth, W. Feely, D. McDuffie, C. Malone, F. Kane, E. D. Rosenberg, H. Turner, R. S. Beck, B. R. Lassek, A. T. Shepherd, A. B. Shepherd, W. E. Hagaman, D. H. Skinner, W. P. Terry, H. G. Richardson, R. L. Craig, E. E. Scott, C. R. Johnson, R. M. McCrea, W. W. Williams, W. Locke, D. W. Locke, G. Huebner, D. Cobb, C. R. Concklin, Jr., H. Madden, S. Densmore, W. E. Sharpe, A. W. Carter, I. H. Geiger, W. C. McLain.

Exhibiting: Revolving unit heater, high velocity door heater, fresh air supply heater, draft inducer, forced draft blower, vane-axial fan.

WIREMOLD CO., THE, Hartford 10, Conn. — Booth 448

In attendance: Paul O. Roedel, Jr., William E. Rejeski, Robert S. Dutton.

Exhibiting: Flexible air duct, designed principally for materials handling.

WOLVERINE TUBE, DIV. OF CALUMET & HECLA, INC., 17200 Southfield Rd., Allen Park, Mich. — Booth 239

In attendance: Chuck Stremmell, Jay Ford,, Bruce Doerring, George Cutting, Art Claes, Sam Robb.

Exhibiting: "Trufin" integral finned tubing, "Capilator" controlled ID capillary tube used for restriction purposes, "Roll-O-Tube" copper tube on a reel, aluminum evaporator assembly comprising copper-to-aluminum connector, the accumulator, the coil. Long-length, level-wound coils for continuous feeding of automatic equipment will be featured.

WOOD CO., JOHN, HEATER AND TANK DIV., 100 Washington St., Conshohocken, Pa. — Booth 444

WORTHINGTON CORP., 401 Worthington Ave., Harrison, N.J. — Booths 129, 133

In attendance: E. R. Michel, A. F. Ward, F. J. Blacker, C. V. Bengle, P. A. McLeod, H. Wolf, G. Morrison, W. E. Roach, W. L. Souther, G. E. Tuckerman, H. J. Kazmar, D. J. Michelson, J. E. Harper, G. H. Redden, E. T. Tkac.

Exhibiting: Packaged air conditioning equipment, multizone units, V-line compressor, centrifugal compressor, induction circulator, fan and coil units. New lines of packaged air conditioners, centrifugal compressors, and hermetic and open V-line compressors will be featured.

WORTHINGTON CORP. — also see MUELLER CLIMATROL

XXTH CENTURY HEATING & VENTILATING CO., 96 Ira Ave., Akron, Ohio — Booth 207

In attendance: J. Garver Kerch, John G. Kerch, Jr., Walter H. Stashkiw, Roger Schaich.

Exhibiting: "Zeph-air"; cast iron gas, oil, and coal furnaces; air conditioning.

YEATS APPLIANCE DOLLY SALES CO., 2124 N. 12th St., Milwaukee 5, Wisc. — Booth C-43

In attendance: James A. Barksdale, Albert F. Marin, Mrs. Virginia Marin

Exhibiting: Appliance dollies and padded appliance covers.

YORK DIV. OF BORG-WARNER CORP., York, Pa. — Booths 150, 250, 350, 450

In attendance: H. M. Haase, A. R. Rising, J. J. Floreth, E. F. Peslar, T. L. Owens, B. L. Williams, A. B. Newton, R. E. Cassatt, C. J. Schurman, W. E. Landmesser, J. M. Farrell, B. D. Maseritz, W. T. Goldsmith, D. H. Crawford, and others.

Exhibiting: Heat pumps and absorption systems will be the theme. Products on display, all operative, will include "Turbo Pac" 100 hp hermetic centrifugal compressor system, two packaged water chilling systems, new "Twin-Temp" induction units, lithium-bromide absorption system, hermetic reciprocating compressor unit, residential heat pump, 10 hp remote packaged air conditioner, "Comfort Center," furnaces, room air conditioners.

YORK POWER DIV., YORK-SHIPLEY, INC., York, Pa. — Booth 831

YORK-SHIPLEY, INC., Jessop & P.R.R., York, Pa. — Booths 817, 821, 825, 831

Exhibiting: Heating boiler, York Power, Industrial Div.; Direct fired furnace, Jackson & Church Div.

YOUNG RADIATOR CO., 709 S. Marquette St., Racine, Wisc. — Booth 848

In attendance: Walter G. Schlichting, G. R. Gibson, P. Menden, A. Kayser, P. Brinen

Exhibiting: Convectors, baseboard convectors, unit heaters, remote room air conditioners, central station air conditioning units, water coils, steam coils; direct expansion coils. New lines of vertical unit heaters, baseboard convectors, central station air conditioning units, and steam coils will be featured.

YOUNG REGULATOR CO., 20910 Miles Ave., Cleveland 28, Ohio — Booth 426

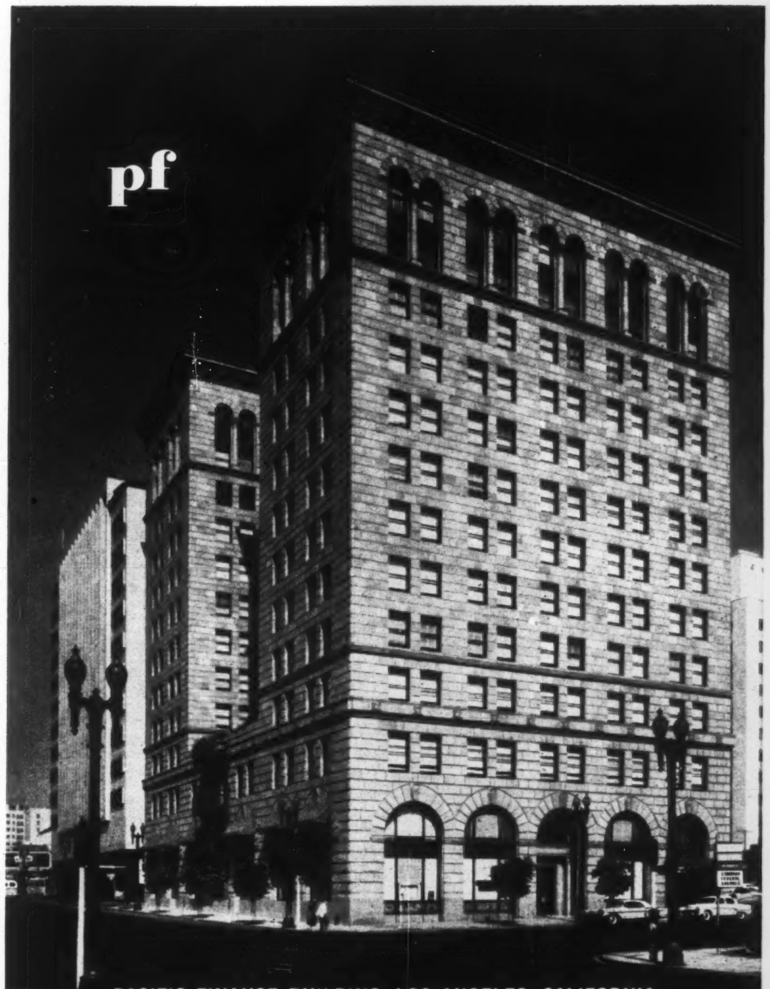
In attendance: E. O. Young, W. J. Zimmer.

Exhibiting: Damper regulators, damper accessories, remote control regulators, dampers, air conditioning grilles, return air grilles, registers, relief dampers, fire dampers.

ZATKO METAL PRODUCTS CO., 20850 St. Clair Ave., Euclid 17, Ohio — Booth 633

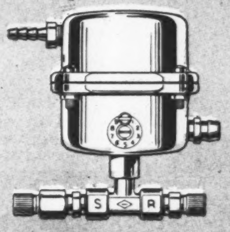
In attendance: Lester T. Zatko, J. L. Menart, Frank P. Gibbons, Bruce McLouth, D. Darnell.

Exhibiting: Stamped steel one-piece pulleys and V belts.



PACIFIC FINANCE BUILDING, LOS ANGELES, CALIFORNIA

Architect: CLAUD BEELMAN • Mechanical Engineer: J. L. HENGSTLER
Air Conditioning Contractor: W. S. KILPATRICK CO.



POWERS CONSTANT AIR VOLUME REGULATOR

(550 installed here)

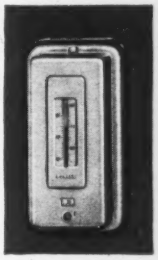
Photo shows it mounted within the mixing box of high velocity dual duct air conditioning system.

Room thermostat controls hot air valve and CAV Regulator controls cold air valve. Working together they provide precise room temperatures at constant air volume, regardless of static pressure variations in air supply ducts. (D-6)

Big Dividends from MODERNIZATION and POWERS

Air Conditioning Control

While many building owners in Los Angeles talked about smog and heat problems, Pacific Finance Corporation eliminated both in its 32 year old building at Wilshire Blvd. and Hope Street.



Powers Individual Room Control now provides year 'round personalized comfort for employees and tenants. Properly conditioned smog-free air is distributed throughout the building to 450 under-the-window and 100 ceiling type high velocity dual duct air conditioning units.

Dividends from a Powers Controlled air conditioning system:

- Higher Rental Income
- Employees accomplish more and make fewer mistakes
- Less absenteeism
- Fewer service calls, lower cost maintenance
- **Powers complete responsibility** for a correctly engineered control system, proper installation, continuous successful operation and **SERVICE** when required from offices in 85 cities.

When you Air Condition or plan a new building, ask your architect or consulting engineer to include a Powers Quality System of Pneumatic Temperature Control. There is none better.

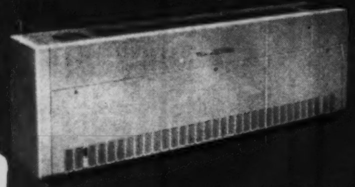
POWERS CONTROL

THE POWERS REGULATOR CO.

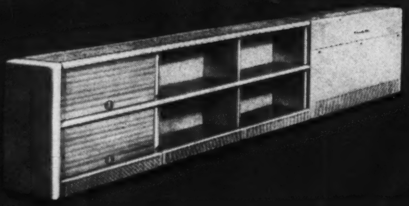
Skokie, Ill. • Offices in 85 Cities in U.S. and Canada

Western Offices: Los Angeles, 3200 Temple St. — San Francisco, San Diego, Seattle, Portland, Phoenix, Albuquerque, Denver, Salt Lake City, Billings, Montana. Texas—El Paso, Dallas, Houston, Lubbock, San Antonio

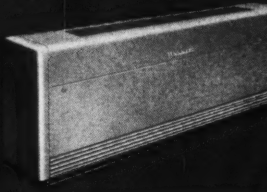
65 years of Temperature and Humidity Control



1. SYNCRETIZER UNIT VENTILATOR



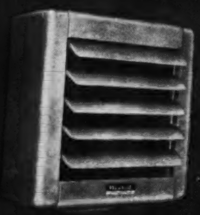
2. SYNCRETIZER AND WIND-O-LINE RADIATION



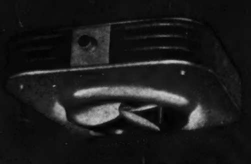
3. YEAR-ROUND SYNCRETIZER

Nesbitt Thermal

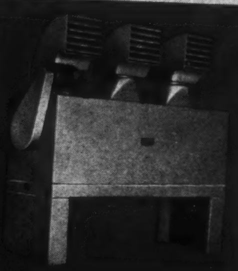
7. GAS FIRED UNIT HEATER



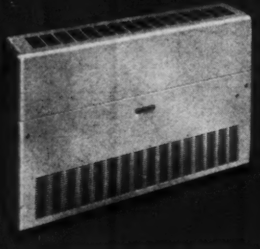
8. PROPELLER FAN UNIT HEATER



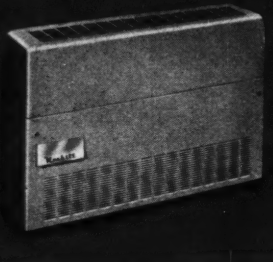
9. LITTLE GIANT HEATER



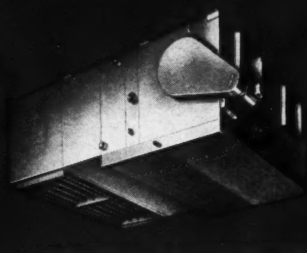
10. GIANT UNIT HEATER



11. CABINET UNIT HEATER



12. ROOMMATE AIR CONDITIONER



13. SERIES M AIR CONDITIONER

1. **SYNCRETIZER UNIT VENTILATOR**—The standard for classroom heating, ventilating, and natural cooling. Four models in 32" and 28" heights; 750 to 1560 CFM; steam or hot water—*Publication* 101.

   SYNCRETIZER FOR ELECTRIC HEATING—Designed in standard Syncretizer Models and capacities, as above, but with electric heating elements; 6.6 to 30 Kw. Wind-o-line Radiation with electric elements also available—*Publication* 10D1.

2. **SYNCRETIZER AND WIND-O-LINE RADIATION**—Integrated with the Syncretizer, Wind-o-line finned-tube radiation protects against window downdrafts and loss of body heat to cold surfaces, providing a uniformly comfortable environment. 450 to 800 Btu/lin. ft. Wind-o-line available concealed by wall-hung enclosures or Nesbitt Storage Cabinets—*Publication* 101.

3. **YEAR-ROUND SYNCRETIZER** provides all-season air conditioning for classrooms, libraries, etc. Five models: 500 to 1500 CFM; heating, 40 to 118 MBH; cooling, 15 to 65 MBH—*Publication* 11-2.

4. **THE MAINLINER**—A quiet heating and ventilating unit for classrooms in certain milder localities. Four models: 500 to 1500 CFM; for use with forced hot water piping concealed by wall-hung enclosures in the economical Mainline System—*Publication* 12-1.

5. **THE THERMOVENT**—A large-capacity, sound-insulated heating and ventilating unit for auditoriums, and wherever quiet operation is important. Wide choice of models and mountings; 1250 to 15,000 CFM—*Publication* 20-1.

6. **THE AUDICON**—A year-round air conditioning unit for quiet operation in auditoriums and other high occupancy spaces. Seven models; 1250 to 15,000 CFM; steam or hot water heating, 40 to 1500 MBH; cooling (may be added later) 3 to 60 tons—*Publication* 22-1.

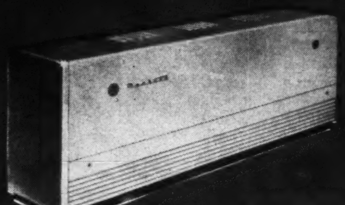
7. **GAS FIRED UNIT HEATER**—Lightweight and more compact, the new Series K unit heater is versatile and attractive. 25,000 to 250,000 Btu/hr. input. Sound code rated—*Publication* 400.

8. **PROPELLER FAN UNIT HEATER**—Eight basic sizes, 24 models; universal heating elements for steam or hot water, capacities from 15,200 to 335,000 Btu/hr.; sound code rated—*Publication* 401.

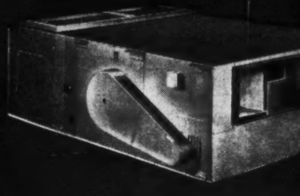
9. **LITTLE GIANT HEATER**—Draw-through propeller fan units with universal heating elements for steam or hot water; 14 sizes, 34 models; 16,000 to 610,000 Btu/hr.; wide choice of vertical or horizontal discharge outlets; sound code rated—*Publication* 402.

10. **GIANT UNIT HEATER**—For large capacity heating and/or ventilating, free or static delivery; 12 basic sizes each with choice of 10 heating elements; steam or hot water; 83,000 to 1,735,000 Btu/hr.; one to three fans; four mountings—*Publication* 404.

11. **CABINET UNIT HEATER**—Series A: versatile high-capacity units; seven basic sizes (265 to 1860 CFM) for steam (71 to 545 sq. ft. EDR) or hot water (9.1 to 120 MBH); recessed, semi-recessed



4. THE MAINLINER



5. THE THERMOVENT

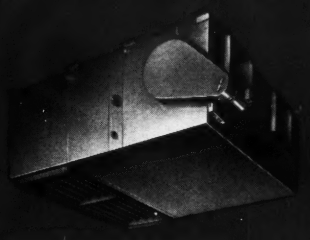
6. THE AUDICON

Comfort—All Ways

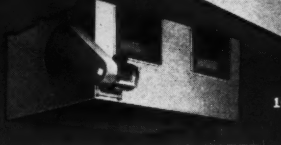
Products for Indoor Thermal Comfort Featuring . . .

- advanced engineering and design
- modern, functional styling
- thorough service

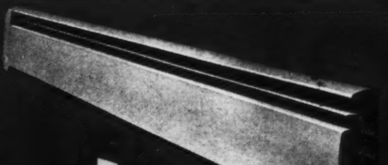
For more than 40 years, Nesbitt products have been used and proved in thousands of schools, offices, churches, hospitals, homes, plus commercial and industrial buildings throughout the United States and Canada. Shown here are only some of the products manufactured by Nesbitt. For full information on any of them, please write to John J. Nesbitt, Inc., Philadelphia 36, Pa.



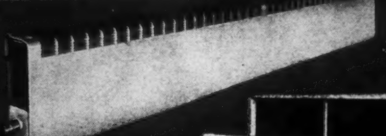
14. SERIES G HEATING & VENTILATING



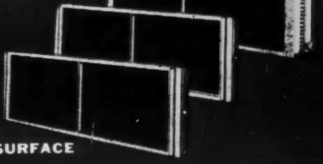
15. BLOWER FAN EXHAUSTER



16. BASEBOARD RADIATION



17. SILL-LINE RADIATION



18. HEATING & COOLING SURFACE

or non-recessed models; floor, wall, ceiling and inverted mountings—*Publication* 403.

12. **ROOMMATE AIR CONDITIONER**—Year-round cabinet conditioner for offices, apartments, etc. Seven sizes: 300 to 1400 CFM; 1 to 5 tons cooling; 35 to 100 MBH heating. Recessed, semi-recessed and non-recessed units for floor, wall or ceiling—*Publication* 600-1.

13. **SERIES M AIR CONDITIONER**—For year-round heating, ventilating and air conditioning in stores, offices, showrooms, etc. Nine models: 1250 to 15,000 CFM; 3 to 60 tons cooling; 40 to 1500 MBH heating, steam or hot water—*Publication* 601-1.

14. **SERIES G HEATING & VENTILATING**—A general purpose unit for cafeterias, gymnasiums, stores, showrooms, etc. Twelve basic sizes: 1000 to 15,700 CFM; 36 to 1390 MBH heating capacity; 18 steam or hot water elements; four mountings—*Publication* 500-1.

15. **BLOWER FAN EXHAUSTER**—Quiet-operating air handling units with sound absorbing silencer; 12 basic sizes; one, two or three fans; air deliveries, 1000 to 22,700 CFM—*Publication* 21-1.

16. **BASEBOARD RADIATION**—Practical design combines strength, beauty and ample capacity (4.1 sq. ft. EDR) for perimeter heating. Copper-tube aluminum-fin element; ratings code approved. Packaged lengths and accessories; easy to install—*Publication* 200.

17. **SILL-LINE RADIATION**—High capacity perimeter heating in attractive wall-hung enclosures for offices, schools, hospitals, churches where comfort and beauty are important. Standard lengths, 2.9 to 12.7 sq. ft. EDR; every needed accessory—*Publication* 30-1.

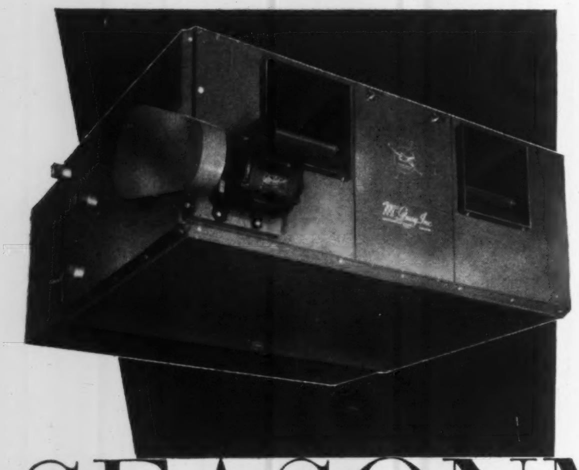
SILL-LINE IN STORAGE CABINETS—the advantage of perimeter heating plus the utility of attractive storage units (32" and 28" heights); 920 to 2750 Btu/lin. ft.—*Publication* 30-2.

18. **HEATING & COOLING SURFACE**—Three famous Nesbitt lines:
Series W water surface: type WB, without drain; and WD, non-freeze drainable type, pitched within casing—*Publication* 302. Type WC, cleanable tubes and removable headers—*Publication* 255.
Series H general purpose blast coil surface for heating, ventilating, air conditioning and drying applications—*Publication* 301.
Series T surface with trombone steam distributing tubes; eliminates stratification and the danger of freezing under modulated valve control; ideal for preheating outdoor air—*Publication* 305.

Nesbitt

THERMAL COMFORT—ALL WAYS

JOHN J. NESBITT, INC., Philadelphia 36, Pa.



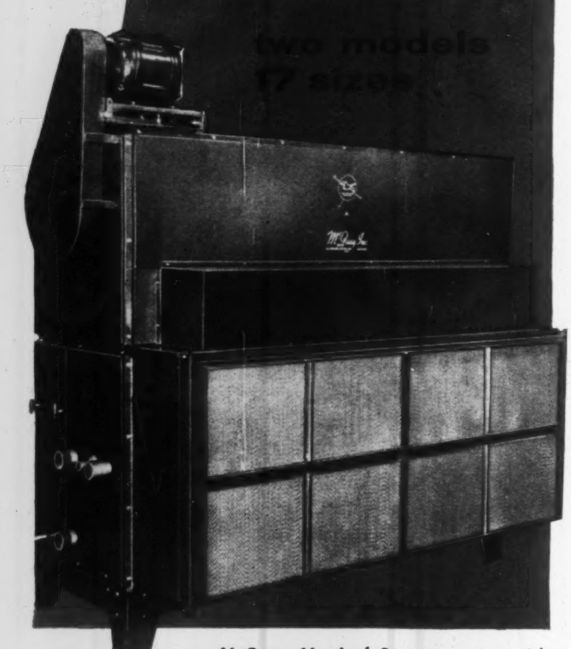
McQuay Horizontal Seasonmaster with water coil, steam coil, face and by-pass, and flat filter section. Removable panels permit complete accessibility for inspection or service. Horizontal models available in 17 sizes, ranging from 640 to 38,100 cfm.

McQuay

SEASONMASTERS

for year 'round comfort

The most universal line of air conditioners in the industry

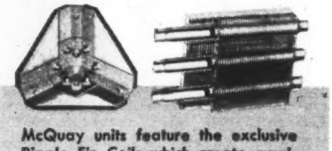


McQuay Vertical Seasonmaster with direct expansion coil, steam coil, face and by-pass, and flat filter section. Heavy gauge galvanized channel framework to form a rigid structure. Sixteen sizes are available, ranging from 640 to 29,000 cfm.

The McQuay line of Seasonmaster central station air conditioners is truly universal. It is the most versatile, the most flexible and the most complete in the industry. McQuay Seasonmaster units will both heat and cool, filter, humidify and dehumidify, when furnished with steam, water heating, water cooling or direct expansion coils in capacities from 640 to 38,100 cfm. A full line of accessories is available for any heating or cooling combination.

For small or large area air conditioning, look to McQuay. Compare the versatility, compare the quality and performance and compare the range of models. And always remember, only McQuay gives you Ripple-Fin coils, Dura-Frame construction and Galva-Seal bonderized, baked-on enamel finish. See the McQuay representative in or near your city or write McQuay, Inc., 1601 Broadway Street N. E., Minneapolis 13, Minnesota.

McQuay
Means Quality



McQuay units feature the exclusive Ripple Fin Coils which create maximum air turbulence and have wide, full fin collars that act as automatic spacers to form a tube around the coil tube for positive, permanent bond, greatest heat transfer and protection. The Dura-Frame "V" channel construction provides the strength and rigidity necessary for quiet, trouble-free operation.

McQuay INC.

MAKE THE SEASONS COME TO YOU

AIR CONDITIONING • HEATING • REFRIGERATION

NEW NOW

AND NEVER BEFORE...

A high performance disposable filter that folds! Flameproof, tearproof with an efficiency of over 35% (atmospheric) by Discoloration Test.

THE COMPLETELY NEW HP-2

"BOX-TO-BANK" CONVENIENCE

FARR
COMPANY
NEW YORK **LOS ANGELES** CHICAGO

FARR COMPANY
P. O. BOX 45187 AIRPORT STATION
LOS ANGELES 45, CALIFORNIA

Now that the cat's out of the bag... let's see it! Send me the HP-2 Filter Story.

NAME____________________

TITLE____________________

COMPANY____________________

STREET ADDRESS____________________

CITY & STATE____________________

Kathabar® systems control all air dimensions... temperature, humidity and purity

You will earn maximum profits from an investment in comfort air conditioning if you specify a Kathabar "full-dimensional" system.

All over the country, Kathabar systems have improved labor productivity in hot and soggy weather, reduced absenteeism, and brightened employee morale.

These profits alone have justified the Kathabar equipment, but there are additional benefits which distinguish Kathabar air conditioning from conventional systems:

extra returns

The Kathabar system automatically conditions *all three* vital dimensions of air—temperature, humidity, and purity. Its control of humidity is a feature favored by users, because it eliminates the shock you feel when you enter or leave spaces conditioned by conventional refrigeration.

The system will either dehumidify or humidify.

specify bacteria count

Air purity is important for both comfort and health, and a Kathabar system contributes to each. Its chemical wash removes odors and dirt from the air. Even better, it kills over 97% of airborne micro-organisms. This drastically reduces the exposure of people and products to mischievous bacteria and molds.

With a Kathabar system, you can actually specify the maximum bacteria count you will tolerate in your space!

Dehumidification for comfort in a Kathabar system is usually accomplished with cooling tower or city water. Where refrigeration is included, the Kathabar system gives you top cooling efficiency with surprising savings in tonnage and horsepower. This is because the system handles latent loads with chemical absorption using lower cost water, and frees refrigeration to handle only the sensible loads.

Since dehumidification is direct (by a chemical absorbent) in a Kathabar system, you avoid the costs of overcooling and re-heating.

no carry-over

The absorbent will not vaporize or carry over into the air stream. With routine checking, it will maintain its effectiveness for years without replacement. The germicidal and bactericidal results are not affected by absorbent age or condition, or whether the system is humidifying or dehumidifying.

Be sure to check the Kathabar system if you want the greatest returns on your air conditioning investment.

who uses Kathabar systems

Kathabar systems make profits out of air for these industries:

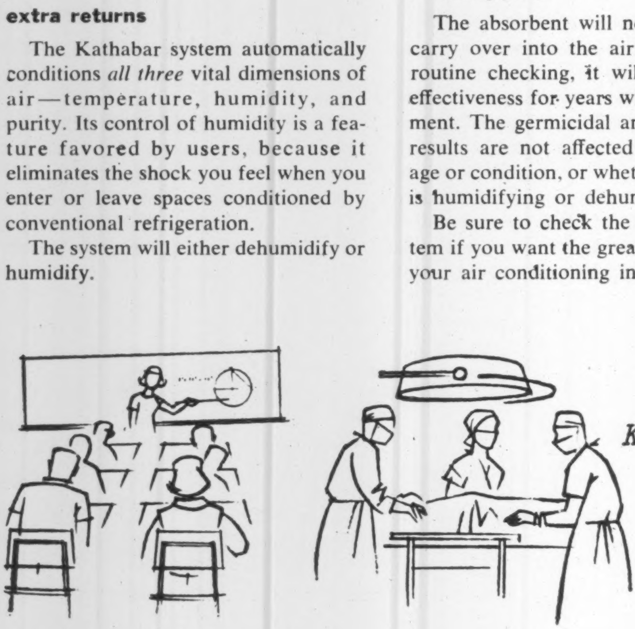
Atomic Energy
Breweries
Cake Mix
Candy
Cellophane
Cellulose
Cereals
Chemicals
Coffee
Comfort
Compressors
Cookies
Electronics
Explosives
Film
Foundries
Gelatin
Glass
Glue
Gum
Hospitals
Hotels
Lacquer
Lenses
Machining
Matches
Marine
Meat
Offices
Ordnance
Paper
Pharmaceuticals
Plastics
Printing
Rockets
Rubber
Shellac
Sugar
Sanitaryware
Testing
Textiles
Transformers
Transistors
Vacuum Tubes
Varnish
Waterworks
Wire
Yeast

how they use Kathabar systems

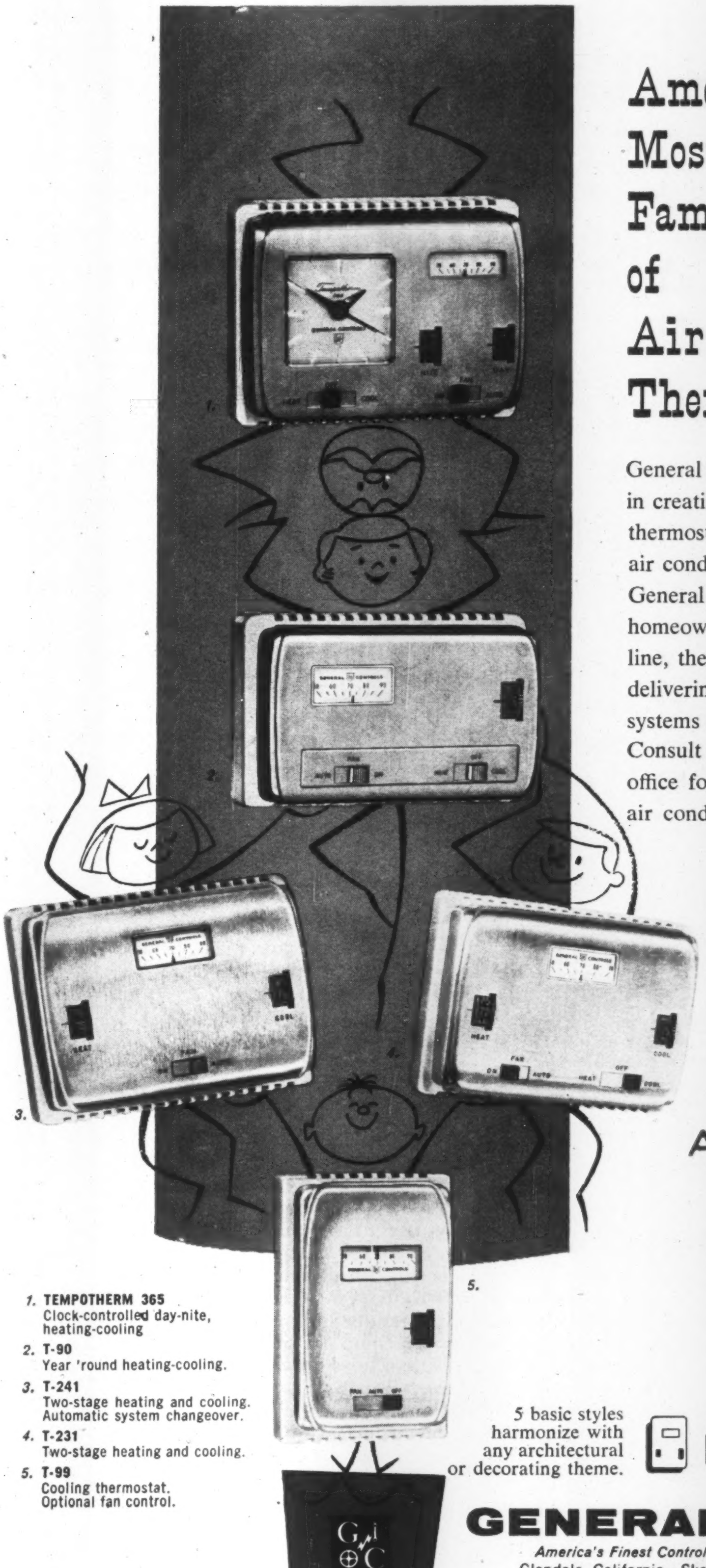
Many of these industries use Kathabar systems for comfort. Others use them to (1) maintain spaces at 80 F and 55% RH or lower; (2) obtain continuous air at sub-freezing dry bulbs and dew points; (3) eliminate condensation; (4) improve drying processes; (5) maintain spaces at specific low bacteria or mold count.

send description of your problem

Air Conditioning & Drying Division
Surface Combustion Corporation
2384 Dorr Street Toledo 1, Ohio



Kathabar systems by Surface



America's Most Complete Family of Air Conditioning Thermostats!

General Controls continues to set the pace in creating the kind of *advanced design* thermostats that afford maximum selectivity in air conditioning thermostats. Not only do General Controls thermostats please the homeowner with their beauty and simplicity of line, they also signify *quality*—and prove it by delivering the top performance engineered into systems and related equipment.
Consult your nearby General Controls branch office for complete details on the many air conditioning thermostats available.

Be sure to see the General Controls Exhibit at the

INTERNATIONAL HEATING AND AIR CONDITIONING EXPOSITION

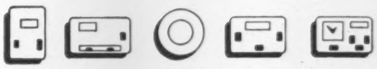
Philadelphia

January 26-29

Booth 513

1. **TEMPOTHERM 365**
   Clock-controlled day-nite, heating-cooling
2. **T-90**
   Year 'round heating-cooling.
3. **T-241**
   Two-stage heating and cooling. Automatic system changeover.
4. **T-231**
   Two-stage heating and cooling.
5. **T-99**
   Cooling thermostat. Optional fan control.

5 basic styles harmonize with any architectural or decorating theme.



GENERAL CONTROLS

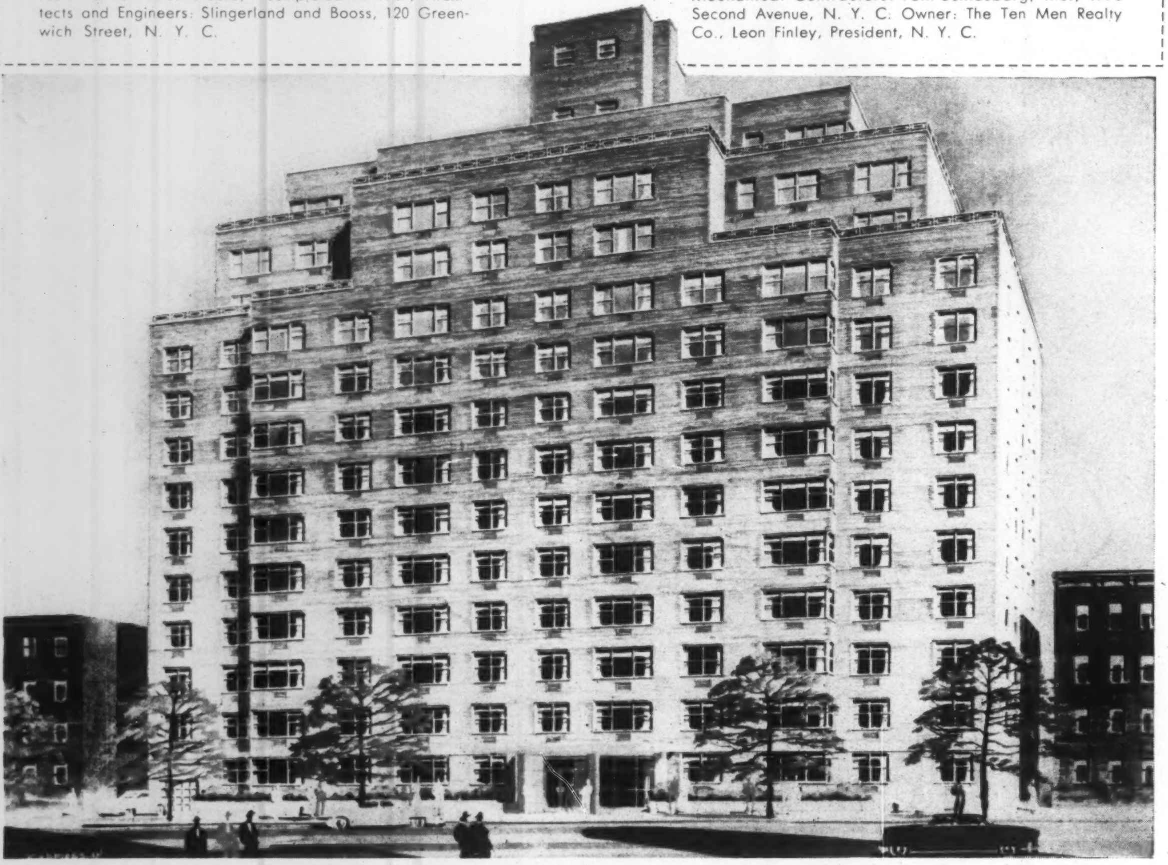
America's Finest Controls for Home, Industry, and the Military
Glendale, California • Skokie, Illinois • Guelph, Ontario, Canada
Six Plants—42 factory branch offices serving the United States and Canada

"WE SECURED EVEN TEMPERATURES THROUGHOUT THIS 14-STORY BUILDING WITH SARCOTHERM HEATING SYSTEM CONTROLS,"

say Slingerland and Booss, architects and engineers

New York's "Avon House," completed in 1957. Architects and Engineers: Slingerland and Booss, 120 Greenwich Street, N. Y. C.

Mechanical Contractors: Fein-Schlosberg, Inc., 1770 Second Avenue, N. Y. C. Owner: The Ten Men Realty Co., Leon Finley, President, N. Y. C.



In the superbly appointed "Avon House" apartments at 340 East 74th Street, New York, the complete automatic heating control job is Sarcotherm. The architects and engineers, Slingerland and Booss, called on Sarco's experienced engineering department to work with them and the mechanical contractor in working out components—controls, vacuum pumps and steam specialties. Besides setting up undivided responsibility of one manufacturer, this policy assured a balanced system with no weak links.

Accurate orifice calculations by Sarcotherm insured proper distribution of subatmospheric steam in the system, even in mild weather. Each of the 2 zones of this building is controlled by a Sarcotherm Continuous Flow Modulating Steam Control Valve. These valves meter the steam to furnish proper heat at any given outside temperature. Control Valves are influenced by outside temperature, wind velocity, and solar radiation, plus differential steam pressure between supply and return mains. A Master Control Panel supplies complete programming operation with automatic control for day, night and morning pickup cycles.

There is ample testimony to the sound judgment of the architects in making this a complete Sarcotherm vacuum heating control system. Since its first day of operation the installation at the new Avon House has been 100% trouble-free.

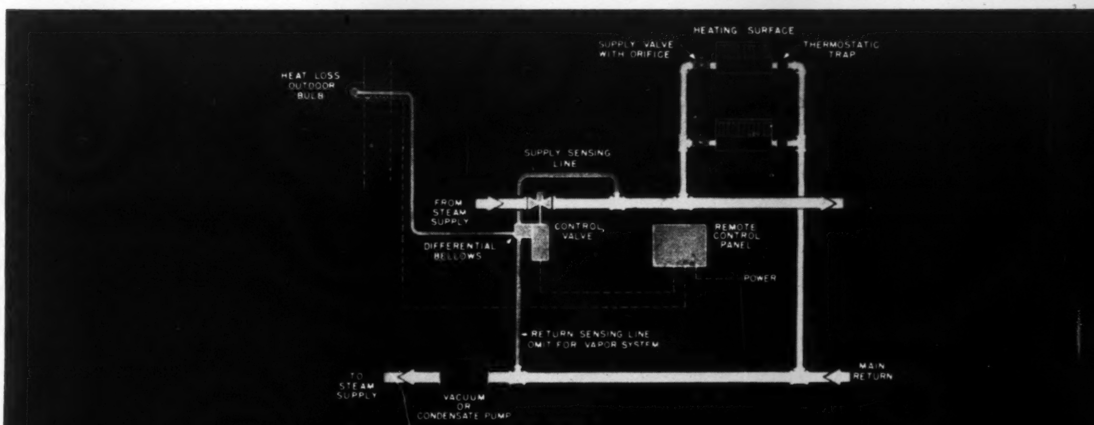
SARCOTHERM

An Affiliate of SARCO Co., Inc.

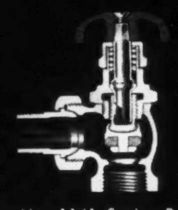
635 Madison Avenue, New York 22, N. Y.

"INSTALLATION WAS EASY, THANKS TO SARCOTHERM ENGINEERING SERVICE AND UNDIVIDED RESPONSIBILITY FOR CONTROLS, SPECIALTIES, PUMPS,"

say Fein-Schlosberg, Inc.,
mechanical contractors


HEATING SURFACE
SUPPLY VALVE WITH ORIFICE
THERMOSTATIC TRAP
HEAT LOSS OUTDOOR BULB
SUPPLY SENSING LINE
FROM STEAM SUPPLY
CONTROL VALVE
DIFFERENTIAL BELLOWS
REMOTE CONTROL PANEL
POWER
RETURN SENSING LINE OMIT FOR VAPOR SYSTEM
MAIN RETURN
TO STEAM SUPPLY
VACUUM OR CONDENSATE PUMP

This schematic hook-up shows continuous-flow Sarcotherm System



Sarco No. 1141 Spring-Packless Steam Radiator Valves, Type H Radiator Traps and Type FT Float-Thermostatic Steam Traps are used.

This WFA-X6 Control Panel has supply and return pressure gauges.

DVA Duplex Vacuum Pump is furnished complete with magnetic starters, float switch and vacuum regulator.

Marked advantages were found by the mechanical contractors in the quality of orifice engineering provided by Sarcotherm. Every valve, for example, was calibrated and the orifice plate brazed in at the factory. All units were tagged, unit-packaged, and keyed in with the hook-up drawing. The installation was supervised by Sarcotherm engineers. The installation was rapid and easy. No on-the-job adjustments were necessary.

SARCOTHERM

An Affiliate of SARCO Co., Inc.

*

FOR COMPLETE CONTROL SYSTEM CATALOG
write Sarcotherm Controls, Inc.,
635 Madison Ave., New York 22, N. Y.

6176-B

Can you find the Pritchard LoLine cooling tower in this picture?

Chances are it will take more than a cursory glance to spot the Pritchard LoLine Cooling Tower in the picture. That's because it is low . . . hugs the roof inconspicuously . . . becomes almost a *part* of the building. It is particularly suited for use where architectural considerations are important.

Yet the Pritchard LoLine tower is a workhorse. Its sleek appearance takes nothing away from its performance. Available in capacities of 75 tons and up, it will handle most commercial and industrial cooling requirements with ease. Initial, operating, and maintenance costs are low, too.

So whether your main concern is aesthetics or performance, air conditioning or process cooling, commercial use or industrial use, there is a Pritchard cooling tower that will fit your needs to a "T."

Pritchard
LoLine

For full information on Pritchard LoLine Cooling Towers, send coupon for informative 16-page bulletin.

J. F. PRITCHARD & CO.
OF CALIFORNIA
Dept. 117,
4625 Roanoke Pky., Kansas City 12, Mo.

Please send Bulletin 5.1.902 on LoLine Cooling Towers

Name.. Title....................

Firm..

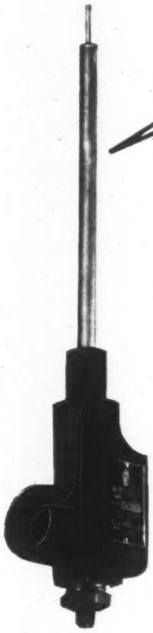
Address..

City.. Zone.......... State..........

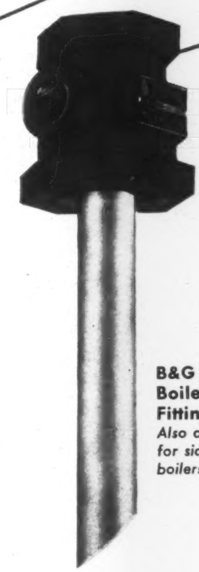
B&G AIRTROL® SYSTEM

ELIMINATES AUTOMATIC AIR VENTS!

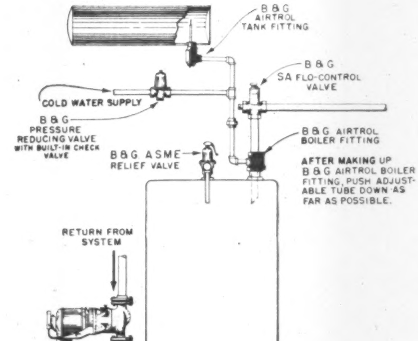
GUARANTEED TO END AIR TROUBLES—*FOREVER*



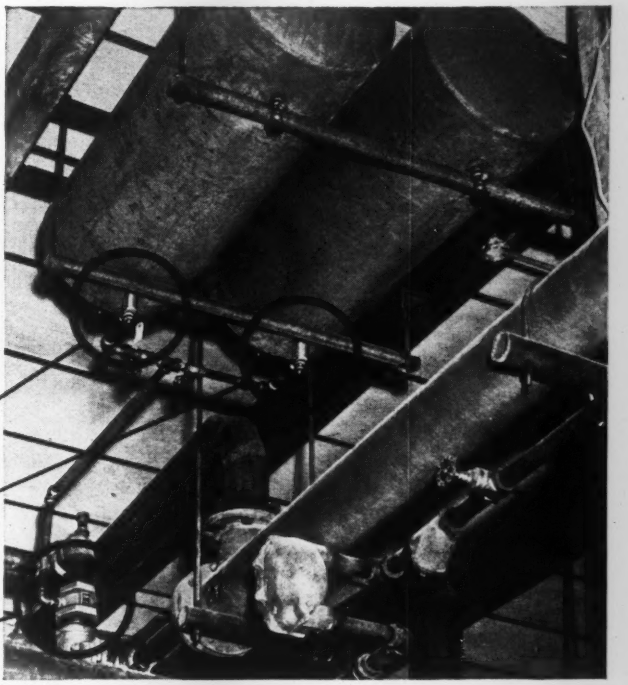
B&G Airtrol Tank Fitting



B&G Airtrol Boiler Fitting
Also available for side outlet boilers.


B & G AIRTROL TANK FITTING
B & G SA FLO-CONTROL VALVE
COLD WATER SUPPLY
B & G PRESSURE REDUCING VALVE WITH BUILT-IN CHECK VALVE
B & G ASME RELIEF VALVE
B & G AIRTROL BOILER FITTING
AFTER MAKING UP B & G AIRTROL BOILER FITTING, PUSH ADJUSTABLE TUBE DOWN AS FAR AS POSSIBLE.
RETURN FROM SYSTEM
B & G PUMP

B&G Airtrol System installed on top outlet boiler



Installation of B&G Airtrol System where B&G Type "SU" steam convertor is used to heat water for a forced circulation hot water heating system.

It is essential to trouble-free operation that a forced hot water heating system be *tightly closed and air-free!*

If an otherwise tight system has *one or more automatic air vents, it is no longer a closed system!* Any air which is vented is lost from the compression tank, resulting in a water-logged tank.

The B&G Airtrol System ends the troubles which may be caused by automatic air vents. When properly installed, the Airtrol System is *guaranteed* to prevent water-logged compression tanks, air-bound radiation and gurgling pipes...and eliminates profitless call-backs.

The Airtrol System is simplicity itself, consisting of two easily installed parts—the Boiler Fitting and the Tank Fitting. Their combined function is to trap air in the compression tank and prevent its return to the boiler, piping and heat distributing units. All air bubbles are caught where they form ...in the boiler.

GUARANTEE

"B&G" Airtrol Systems are guaranteed to prevent the accumulation of air in heating units and prevent noises caused by entrained air in the piping. In case of the failure of any B&G Airtrol System (within the U.S.A.) to operate correctly, when installed in accordance with our published instructions, we will provide, free of charge, the services of a factory-trained engineer who will supervise the changes required to produce guaranteed satisfactory results.

BELL & GOSSETT
COMPANY
Reg. U.S. Pat. Off.
Dept. FO-5, Morton Grove, Illinois

Canadian Licensee: S. A. Armstrong Ltd., 1400 O'Connor Drive, Toronto 16, Ontario

The 1959 Automatic Diffuser by GENERAL

THERMO-FLO
STYLE CCAT
Patent Pending

AUTOMATICALLY BLOWS
- ***VERTICALLY FOR HEATING***
- ***HORIZONTALLY FOR COOLING***

An investment of a few pennies more, now buys an all aluminum, adjustable diffuser that *will be used* as an adjustable diffuser . . . with these advantages:

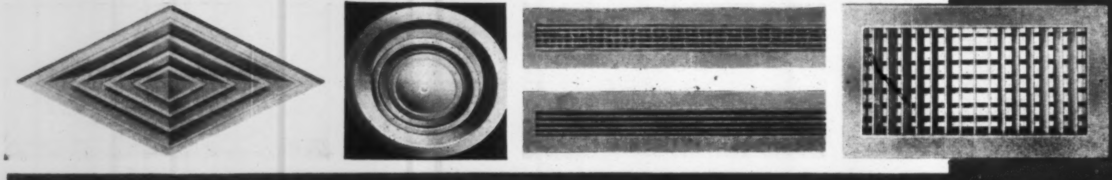
- No change in external appearance
- No corrosion problems — ever
- Ideal for any type mounting
- Simplicity of installation

1 — Mount outer ring
2 — Snap-in grid
3 — Snap-in radial damper
4 — Snap-in center cone

Aluminum construction minimizes lifting problems. 32″ diameter diffuser weighs less than 25 lbs.

▼
VISIT
BOOTH 613
AT
INTERNATIONAL
HEATING &
AIR CONDITIONING
EXPOSITION
JAN. 26-29
PHILADELPHIA

A COMPLETE LINE OF SQUARE, RECTANGULAR, CIRCULAR, and SLOT TYPE DIFFUSERS . . . REGISTERS & GRILLES



Quality products of GENERAL AIR PRODUCTS CORP.
4-6 FACTORY STREET • CEDAR GROVE, N. J.

new SUPER/AIR-VAN®

in FIBERGLAS*

AVAILABLE IN ANY COLOR

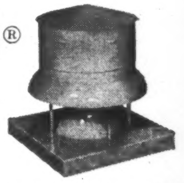
- INHERENTLY QUIET
- SONOSOLVE HOOD
- NEVER NEEDS PAINTING
- CORROSION RESISTANT
- LIGHTWEIGHT
- STRONGER THAN STEEL
- LOW INITIAL COST
- LOW SILHOUETTE
- PATENTED SCROLL DESIGN
- PATENTED AIR SEAL OFF
- CAPACITIES 100-11000 CFM S.P. TO 4"

U. S. Pats. 2188741, 2526290
Pats. Pending

CERTIFIED RATINGS
AUTHORIZED BY AMCA

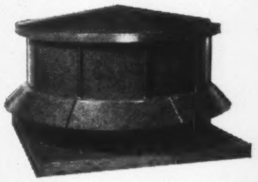
Units with less than 12" wheels do not carry AMCA seals because AMCA test codes do not apply to these small units.

Direct Drive AIR-VAN®



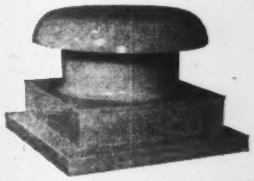
Capacities 100-11,000 CFM
Static Pressures to 4"

Belt Drive AIR-VAN®



Capacities to 65,000 CFM
Static Pressures to 4"

Axial Flow AIR-MAX®



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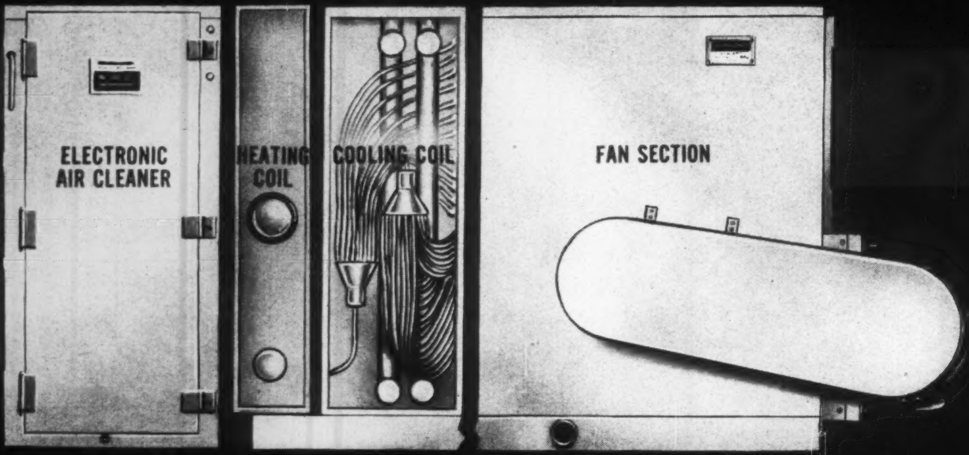

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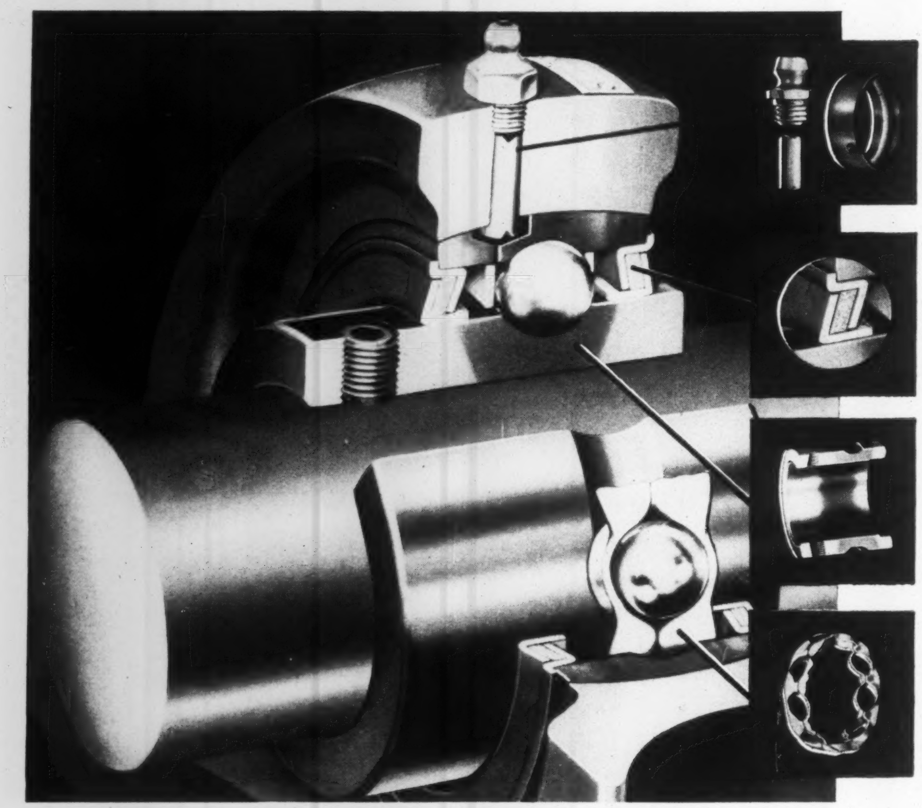

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. . . permits selective fit between outer race of bearing and housing — an important feature that assures quiet bearing operation for air conditioning service.

LABYRINTH SEAL

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. . . assures positive race to shaft holding power. Reduces corrosion.

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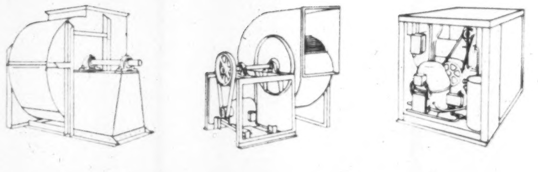
. . . minimizes ball wear, traps grease and prevents "churning."

An air conditioner — like any piece of equipment — becomes obsolete the day your competitor's product out-performs your own. It is for this reason that air conditioning engineers are continually involved in research to find ways to improve their product. It's the reason, too, that you find SEALMASTER Ball Bearing Units specified by many of the leading air conditioning manufacturers. SEALMASTER Ball Bearing Units, with their exclusive combination of patented engineering features, provide you with a decided performance advantage. It's the ball bearing unit line that's often copied but never equalled for performance.



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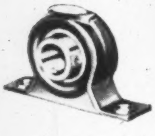

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get long term protection
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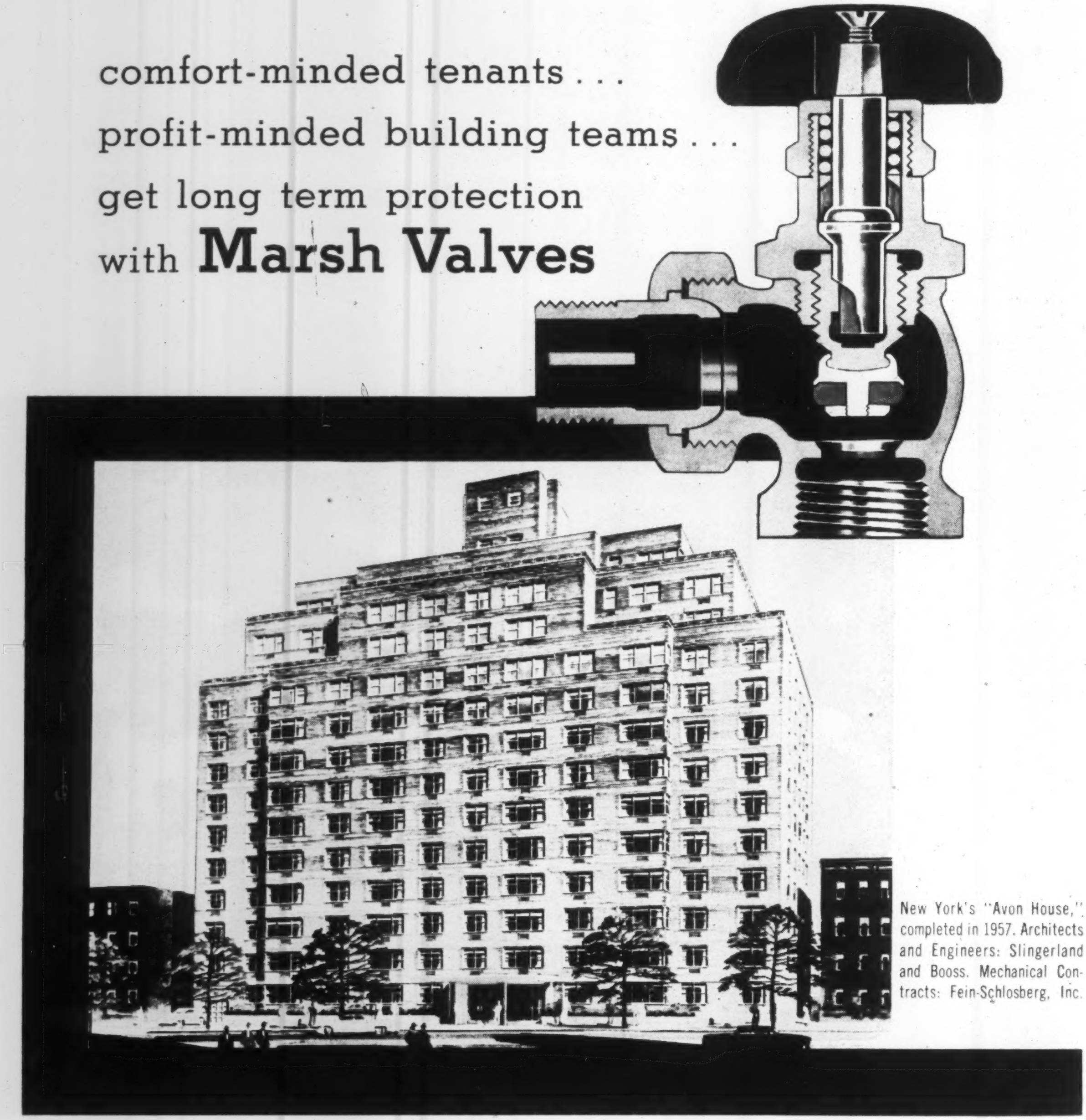
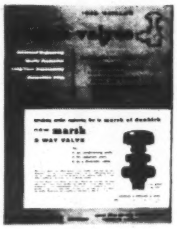


New York's "Avon House," completed in 1957. Architects and Engineers: Slingerland and Booss. Mechanical Contracts: Fein-Schlosberg, Inc.

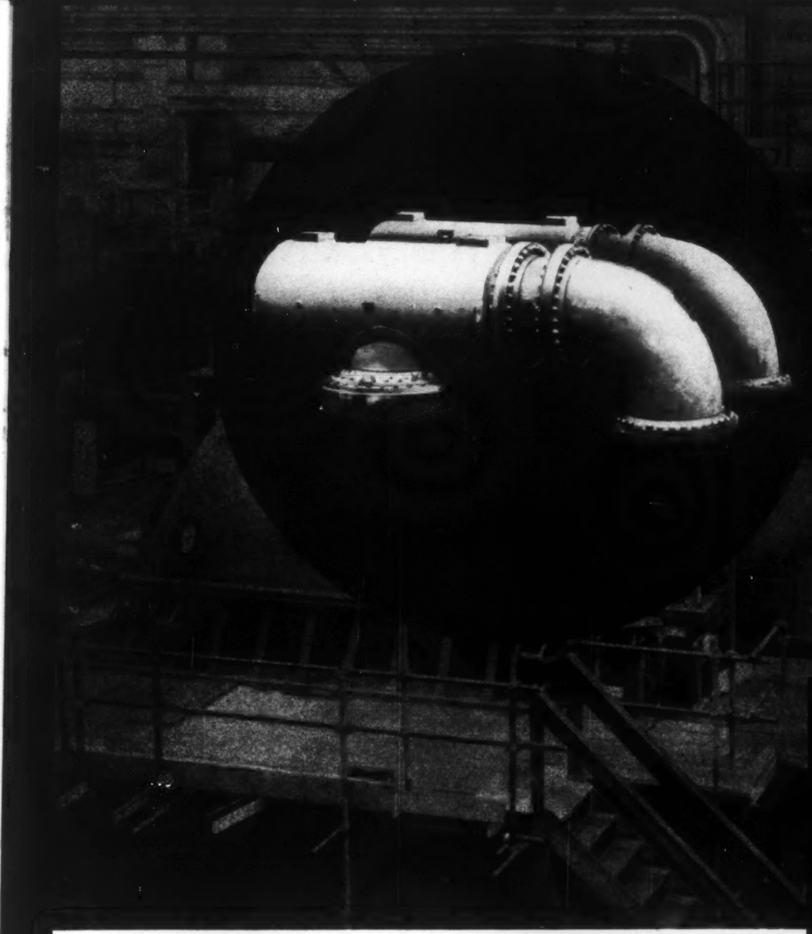
Typical of the vital service MARSH VALVES offer can be found in "Avon House" a new luxury apartment on New York's swank East Side. Here, architect, mechanical contractor and owner strove for perfection and the ultimate in gracious living.

Into an imaginatively conceived, expertly installed automatic heating system MARSH (Fig. 1141) Packless Valves were specified. The result: an installation that will endure with trouble-free service and minimum profit-eating call backs. Tenants enjoy the comfort they seek, the building team enjoys the assurance of profit-protection and initial low cost. This assurance can be yours through the quality manufacture, advance design and built-in durability of MARSH VALVES. Specify them on your next job.



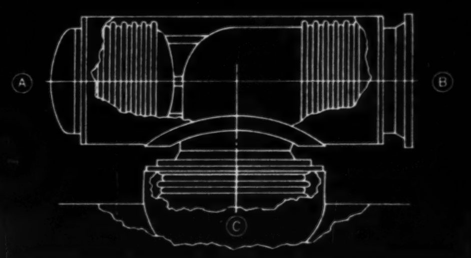
WRITE FOR COMPLETE 1959 CATALOG

Marsh Valve COMPANY OF DUNKIRK, NEW YORK



GIANT Turbine Expansion Joints Built by BADGER

Badger balanced elbow expansion assembly.



Joint A balances thrust due to internal pressure of 65-150 psi; joint B absorbs axial movement; joint C absorbs the differential expansion between the inner and outer casings of the turbine. Assemblies range in size from 36 to 42 inches in diameter.

Photo shows 150,000 kw steam turbine-generator unit undergoing tests prior to shipment at General Electric's Turbine-Generator Plant in Schenectady, N. Y. Badger Expansion Assembly is clearly visible atop turbine.

Custom engineered assemblies include many features of Badger S-R Design

750°F steam is flashed through these turbine crossovers at speeds up to 150 ft/sec and pressures up to 150 psi.

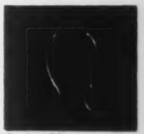
How do you protect piping and turbine casings from the stresses of extreme internal pressure and the expansion such temperature is bound to produce?

Working together, Badger and engineers at General Electric's Large Steam Turbine-Generator Department solved the problem with a new type pressure balanced elbow expansion assembly. Using two separate joints mounted in a T-shape casing (see diagram) the assembly effectively absorbs and controls axial movement. Although the device was custom engineered to General Electric's requirements, the bellows elements are constructed to the Curvilinear Corrugation design recently announced by Badger and now used in all S-R Expansion Joints.

Whether you need standard S-R Expansion Joints or custom equipment, Badger can serve your needs. Get more information — write for illustrated brochure today.

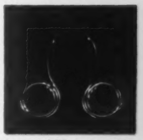
New corrugation and ring designs produce better equalization, "all-curve" flexing

Curvilinear Corrugations used in S-R Expansion Joints were developed by the Badger Research Department. Under operating pressures (white line) the new design produces more uniform movement per corrugation and natural "all-curve" flexing. Stress is reduced . . . life increased.



Series 50 corrugation cross-section

S-R Joints for higher pressures have tubular Reinforcing Rings. These new rings make metal-to-metal contact only in the "valley" of each corrugation allowing natural "all-curve" flexing (white line). Tubular shape permits greater effective flexing height which contributes to longer life.



Series 150 corrugation and ring cross-section

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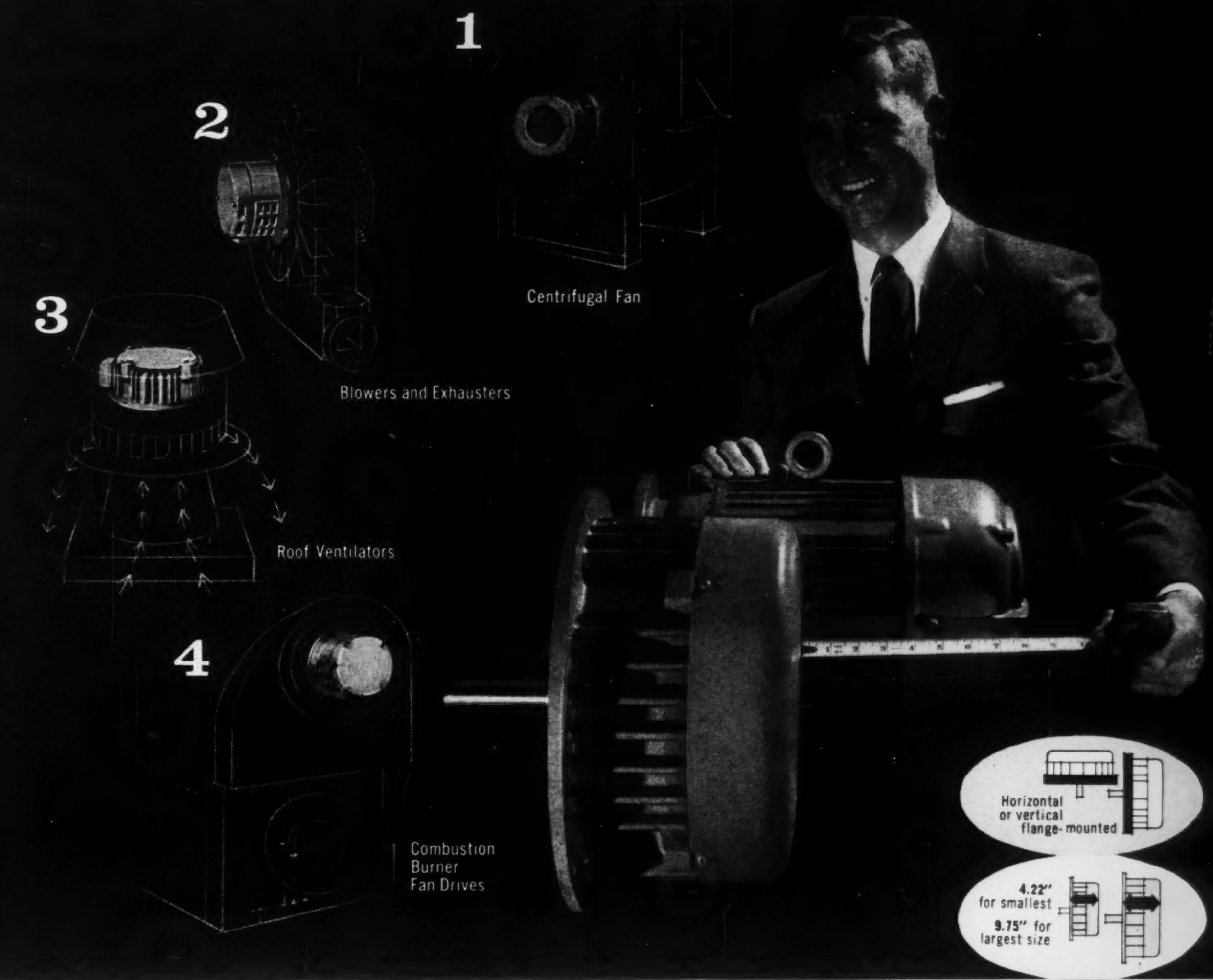
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New Pancake motor is up to 60% shorter — saves space on fans or blowers

Louis Allis Pancake Motor offers many advantages for use in air-moving equipment

The Louis Allis Pancake Motor offers substantial savings in space, weight and installation cost when used for powering fans, blowers and ventilators.

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This new motor has conventional radial air gap construction, assuring excellent torque characteristics and performance.

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Sized from ¾ to 15 hp; 3600, 1800, 1200, and 900 rpm; open drip-proof and enclosed non-ventilated and fan-cooled enclosures. For more information, contact your local Louis Allis District Office, or write for Bulletins 2100 and 2150 to The Louis Allis Co., 453 East Stewart Street, Milwaukee 1, Wisconsin.

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Open and unprotected motor bearings subject to contamination and must be inspected and lubricated frequently.

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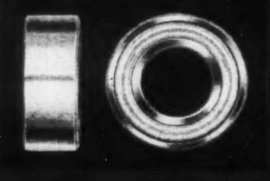

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Sealed and protected—Lima's DOUBLE-WIDTH pre-lubricated motor bearings require no attention—just put the motor to work and forget it.

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The complete Powell line includes all types of valves in bronze, iron, steel and corrosion resistant metals and alloys, for pressures from 125 to more than 2500 pounds W.P. Consult your local distributor (there's one in most major cities) or write to:

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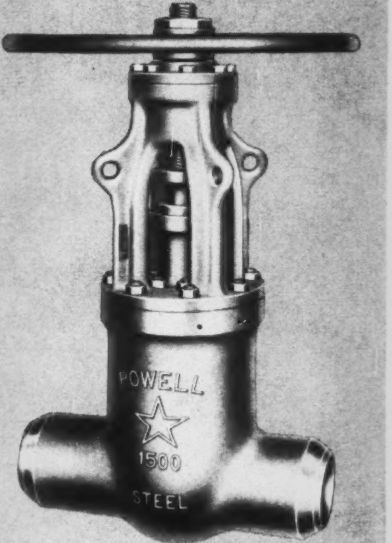

Fig. 11303 W. E.: Steel O. S. & Y. pressure seal gate valve for 1500 pounds W. P. at high temperatures. Powell pressure seal valves are available for working pressures from 600 through 2500 pounds.

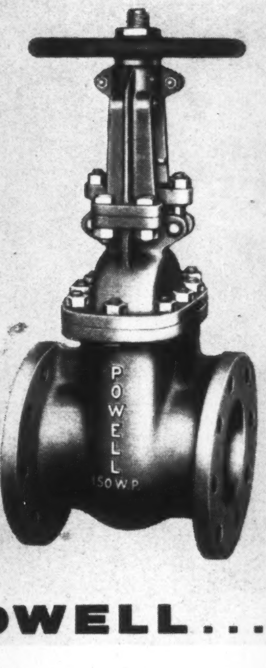

Fig. 2453G: Large 150 pound stainless steel O. S. & Y. gate valve for low temperature service. Can be furnished with interchangeable solid or double wedge disc.

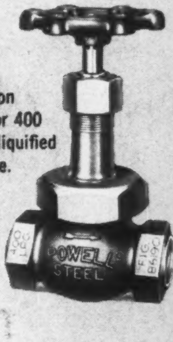

Fig. 86190: Steel union bonnet globe valve for 400 W.O.G. Designed for liquified petroleum gas service.

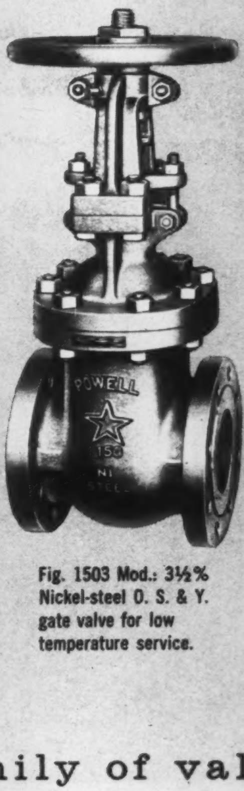

Fig. 1503 Mod.: 3½% Nickel-steel O. S. & Y. gate valve for low temperature service.

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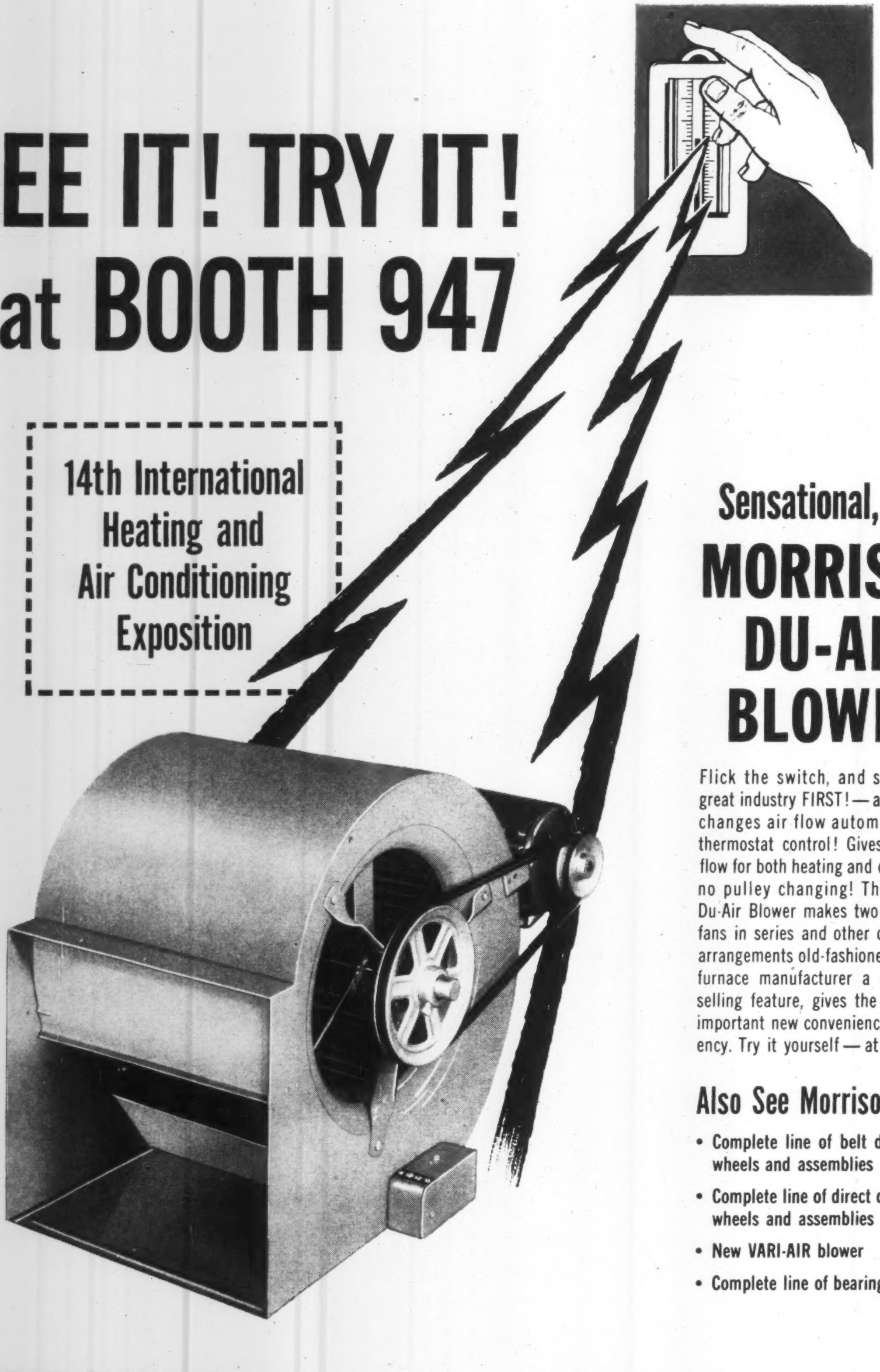

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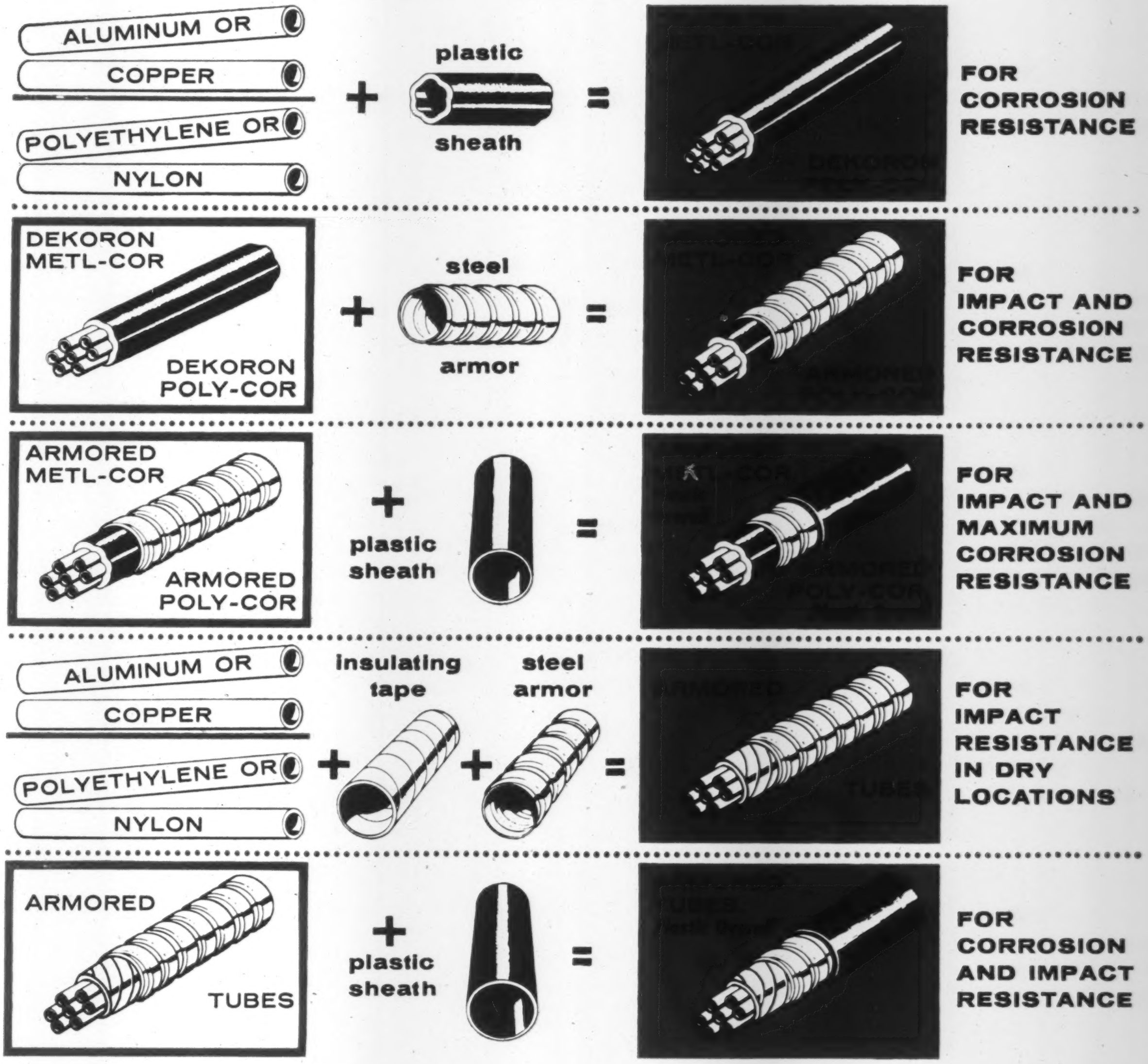
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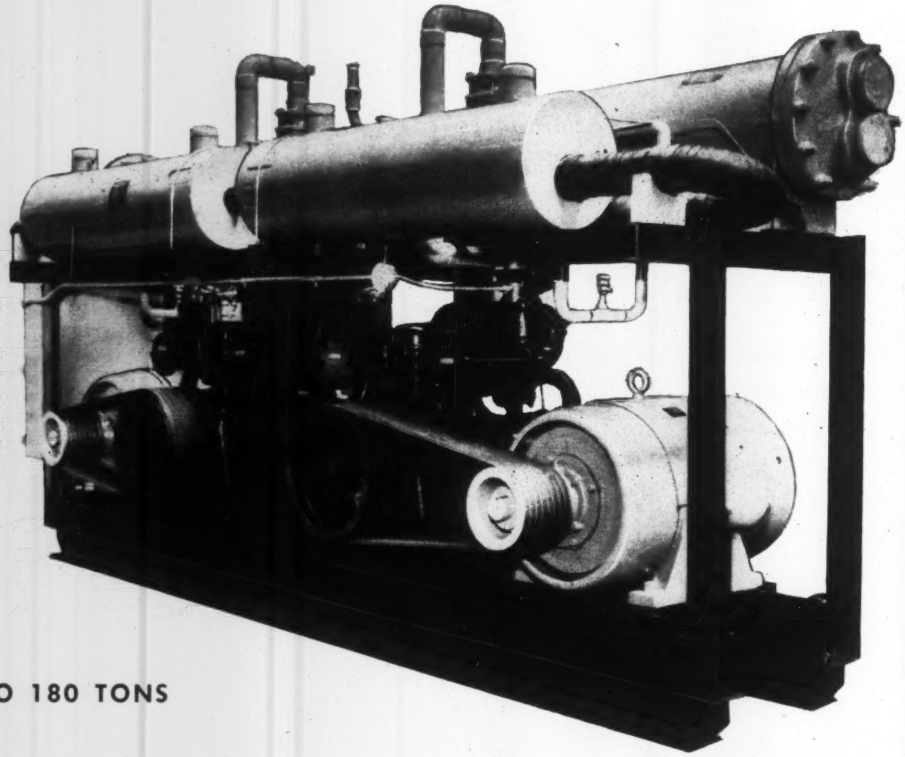

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A COMPLETELY ENGINEERED, PACKAGED LIQUID CHILLER . . . INCORPORATING ALL OF THE COMPONENTS IN ONE UNIT.

Each chiller is factory-assembled on a rigid steel base, balanced, and tested, ready for easy installation. Refrigeration is supplied by the famous Frick "ECLIPSE" compressor, with condenser-receiver. Machines handle either refrigerant 12 or 22. Automatic controls adjust the liquid supply and compressor capacity to assure economical operation at all times. Safety features such as oil-pressure switch, high-low pressure cut-outs, freeze-up control on chiller, and two-stage thermostat for automatic regulation of liquid and compressor, are all standard on Frick liquid chillers.

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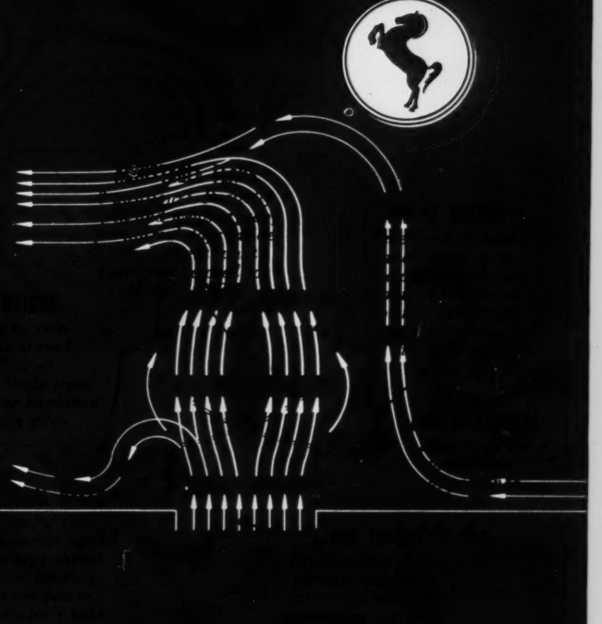

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NEW 4-D WROUGHT IRON costs less, lasts longer

The lower the cost per year, the more economical the investment. Especially so when the material lasts a long, long time. Take the cost comparisons below. Based on actual installations, users of wrought iron cold drawn tubing have been investing wisely for many years. Now, with new 4-D Wrought Iron available, your savings are even greater.

Note: New 4-D Wrought Iron was achieved by substantially increasing the deoxidation of the base metal, slightly increasing the phosphorous content and using a more siliceous iron silicate.

Result is *increased* corrosion-resistance, *improved* mechanical and physical properties.

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Ice Company, Chicago, Illinois Carbon dioxide condenser service.	.03 (18 years)	.05 (10 years)
Film Corporation, Binghamton, New York Tubes used in cooling service.	.04 (15 years)	.06 (8 years)
Industrial Plant, New Bedford, Massachusetts Ammonia condenser with salt water in coolant.	.04 (12-14 years)	.48 (1 year)
Industrial Plant, Toronto, Canada Tube and shell type condenser used for cooling brine with ammonia.	.01 (50 years)	.07 (7 years)
Ice Company, Aiken, South Carolina Ammonia condensers with mild brine solution containing 76 ppm sodium chloride for cooling.	.03 (18 years)	.29 (2 years)
Ice Company, Rocky Mount, North Carolina Condensers with mild brine solution containing 75 ppm sodium chloride for cooling.	.07 (8 years)	.16 (3 years)
Industrial Plant, Wisconsin Vaporizers for production of butane and propane gas. Severe stresses created by wide temperature variances.	.28 (2 years)	.96 (6 months)
Oil Company, Long Island City, New York Cool, weak ammonia liquor cools hot, concentrated ammonia liquor coming from generator on the way to absorber.	.03 (20 years)	.07 (6-8 years)
Process Company, Detroit, Michigan Heat exchangers with ammoniated brine concentration of about 10% ammonia and salt almost to saturation point.	.08 (8 years)	.16 (3 years)
Gas Company, Brooklyn, New York Ammonia condenser with cooling medium of creek water contaminated by the refuse from several nearby industrial plants.	.05 (16 years)	.22 (3-5 years)
Alkali Company, Saltville, Virginia Heat exchanger carrying ammonia liquor that is subsequently cooled by surrounding water.	.05 (16 years)	.30 (6 mos.-3 years)
Industrial Plant, Chicago, Illinois Condenser tubes in absorption system. Ammonia inside the tubing is about 200°F. and water outside the tubes is about 40°F.	.09 (9-11 years)	.28 (3 years)
Electric Utility Company, Hunts Point, New York Gas cooler drawing water from East River in New York City.	.15 (8-9 years)	.45 (2-3 years)
Warehouse & Cold Storage Corp., Springfield, Massachusetts Ammonia condensers and direct expansion cooling coil.	.02 (30 years)	.04 (12 years)

"Cost per foot per year" figures are calculated from current prices of cold drawn seamless steel tubing (ASTM A-179) and cold drawn wrought iron tubing (ASTM A-382). Because of the many variables involved, costs for installation labor, maintenance and replacement are not included. If they were, wrought iron's low cost story would, of course, be even more impressive.

Details on any of the above installations furnished on request. Write for Wrought Iron Heat Exchanger and Condenser Tubing bulletin.

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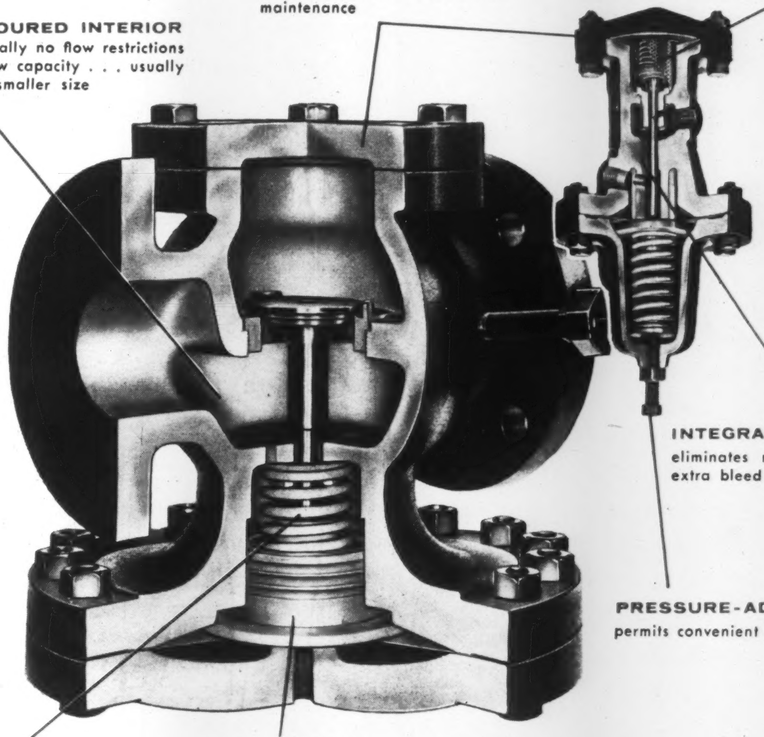

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on both main valve and pilot allow easy access for routine maintenance

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protects pilot from scale, dirt, other foreign matter, is removable for cleaning

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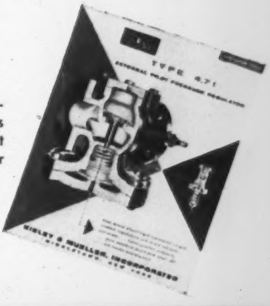
eliminates need for installation of extra bleed line

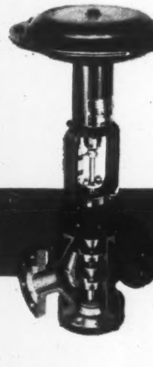
PRESSURE-ADJUSTING SCREW
permits convenient external pressure setting

GUIDE PISTON
has balancing grooves which hydraulically center guide, prevent binding and side-thrust

CONTROL SPRING
is isolated from main flow stream for greatest protection



If you would like a more detailed, close-up look at K & M's new Type 471 External Pilot Pressure Regulator, send for Bulletin 471A.



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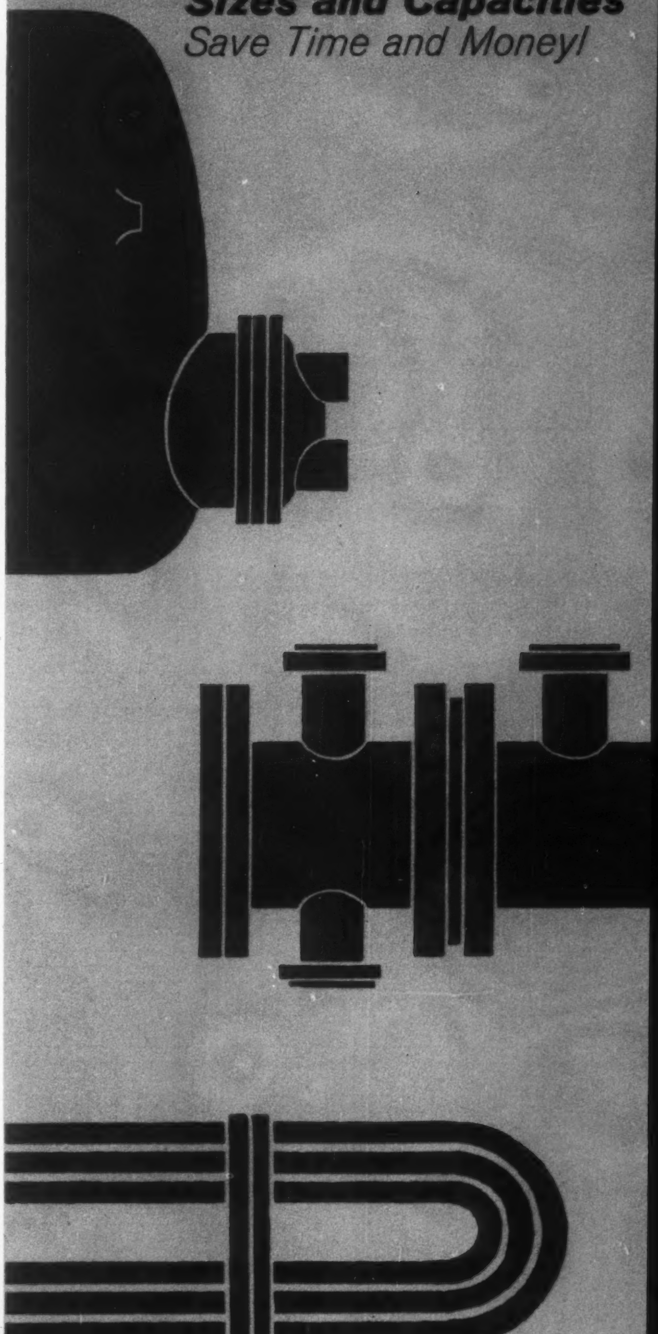
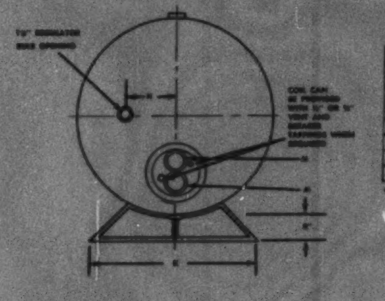


HOT WATER GENERATORS & STORAGE VESSELS

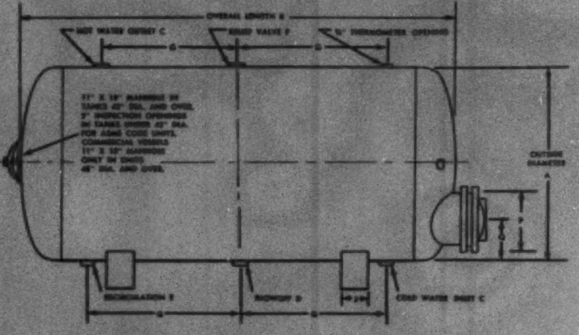
HORIZONTAL


1½" REGULATOR BULB OPENING
H
COIL CAN BE PROVIDED WITH ½" OR ¾" VENT AND BREAKER TAPPINGS WHEN REQUIRED
M
R
6"
K

COIL DATA

COIL NUMBER	INLET & OUTLET B*	P	R
4V	1½	8	5
5V	2	9	6½
6V	2½	10¼	7½
8V	3	12¼	9
10V	4	14½	10
12V	5	17	13
14V	6	19¼	17

*Applies to two pass (steam) coils only.


OVERALL LENGTH B
HOT WATER OUTLET C
RELIEF VALVE F
¾" THERMOMETER OPENING
G
G
11" X 15" MANHOLE IN TANKS 42" DIA. AND OVER. 2" INSPECTION OPENINGS IN TANKS UNDER 42" DIA. FOR ASME CODE UNITS. COMMERCIAL VESSELS 11" X 15" MANHOLE ONLY IN UNITS 48" DIA. AND OVER.
OUTSIDE DIAMETER A
P
R
RECIRCULATION E
BLOWOFF D
J
COLD WATER INLET C
G
G

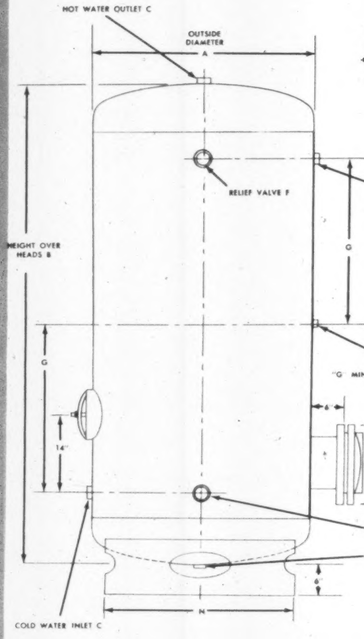
DIMENSIONS AND CAPACITIES

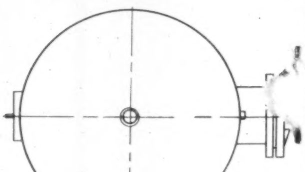
TANK NUMBER	OUTSIDE DIA. A	OVERALL LENGTH B	NOMINAL CAPACITY GALLONS	WATER INLET & OUTLET C	BLOWOFF D	RECIRCULATION E	RELIEF VALVE F	G	H	SADDLES J	SADDLES K
3H 4	18	48	50	1	1	1	¾	16	4½	4	15½
3H 5	18	60	66	1	1	1	¾	22	4½	4	15½
3H 6	18	72	79	1	1	1	¾	28	4½	4	15½
4H 4	24	48	95	1	1	1	¾	16	6	4	23½
4H 5	24	60	118	1	1	1	¾	22	6	4	23½
4H 6	24	72	141	1	1	1	¾	28	6	4	23½
4H 7	24	84	164	1½	1	1	¾	32	6	4	23½
5H 5	30	60	184	1½	1	1	¾	19	7½	4	23½
5H 6	30	72	220	1½	1	1	¾	25	7½	4	23½
5H 7	30	84	256	1½	1	1	¾	31	7½	4	23½
5H 8	30	96	292	1½	1	1	¾	37	7½	4	23½
5H 9	30	108	328	2	1	1	¾	43	7½	4	23½
6H 6	36	72	317	2	1	1	¾	24	9	4	35½
6H 7	36	84	370	2	1	1	¾	30	9	4	35½
6H 8	36	96	423	2	1	1	1	36	9	4	35½
6H 9	36	108	476	2	1	1	1	42	9	4	35½
6H10	36	120	529	2	1	1	1	48	9	4	35½
7H 7	42	84	504	2	1	1	1	26	10½	4	35½
7H 8	42	96	576	2	1	1	1	32	10½	4	35½
7H 9	42	108	648	3	1½	1½	1	36	10½	4	35½
7H10	42	120	720	3	1½	1½	1	42	10½	4	35½
7H12	42	144	864	3	1½	1½	1	54	10½	4	35½
7H14	42	168	1008	3	1½	1½	1¼	66	10½	4	35½
8H 8	48	96	752	3	1½	1½	1	30	12	4	44
8H 9	48	108	846	3	1½	1½	1¼	36	12	4	44
8H10	48	120	940	3	1½	1½	1¼	42	12	4	44
8H12	48	144	1128	3	1½	1½	1¼	54	12	4	44
8H14	48	168	1316	4	2	2	1¼	66	12	4	44
8H16	48	192	1504	4	2	2	1½	78	12	4	44
9H 9	54	108	1070	3	1½	1½	1¼	34	13½	4	52½
9H10	54	120	1190	3	1½	1½	1¼	40	13½	4	52½
9H12	54	144	1430	4	2	2	1½	52	13½	4	52½
9H14	54	168	1670	4	2	2	1½	64	13½	4	52½
9H16	54	192	1910	4	2	2	1½	78	13½	4	52½
10H10	60	120	1469	4	2	2	1½	40	15	5	53
10H12	60	144	1763	4	2	2	1½	52	15	5	53
10H14	60	168	2057	4	2	2	1½	64	15	5	53
10H16	60	192	2351	4	2	2	1½	78	15	5	53
12H12	72	144	2538	5	3	3	1½	48	18	6	60
12H14	72	168	2962	5	3	3	2	60	18	6	60
12H16	72	192	3386	5	3	3	2	72	18	6	60
14H14	84	168	4030	6	3	3	2	54	21	6	72
14H16	84	192	4606	6	4	4	2	66	21	6	72
14H18	84	216	5182	6	4	4	2	78	21	6	72
16H16	96	192	6016	6	4	4	2	63	24	6	84
16H18	96	216	6768	6	4	4	2	75	24	6	84
16H20	96	240	7520	6	4	4	2	87	24	6	84

All dimensions in inches. Units furnished with standard NPT screwed connections.

HOT WATER GENERATORS & STORAGE VESSELS

VERTICAL

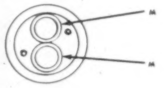

HOT WATER OUTLET C
OUTSIDE DIAMETER A
RELIEF VALVE F
¾" THERMOMETER OPENING
HEIGHT OVER HEADS B
G
G
"G" MINUS "R"
1¼" REGULATOR BULB OPENING
6"
14"
P
RECIRCULATION E
BLOWOFF D
6"
N
COLD WATER INLET C



COIL DATA

COIL NUMBER	INLET & OUTLET B*	P	R
4V	1½	8	3
5V	2	9	3
6V	2½	10¼	4
8V	3	12¼	5
10V	4	14½	6
12V	5	17	7
14V	6	19¼	8

*Applies to two pass (steam) coils only.



11" X 15" MANHOLE IN TANKS 42" DIA. AND OVER. 2" INSPECTION OPENINGS IN TANKS UNDER 42" DIA. FOR ASME CODE UNITS. COMMERCIAL VESSELS 11" X 15" MANHOLE ONLY IN UNITS 48" DIA. AND OVER.

DIMENSIONS AND CAPACITIES

TANK NUMBER	OUTSIDE DIA. A	OVERALL LENGTH B	NOMINAL CAPACITY GALLONS	WATER INLET & OUTLET C	BLOWOFF D	RECIRCULATION E	RELIEF VALVE F	G	N
3V 4	18	48	50	1	1	1	¾	16	12
3V 5	18	60	66	1	1	1	¾	22	12
3V 6	18	72	79	1	1	1	¾	28	12
4V 4	24	48	95	1	1	1	¾	16	18
4V 5	24	60	118	1	1	1	¾	22	18
4V 6	24	72	141	1	1	1	¾	28	18
4V 7	24	84	164	1½	1	1	¾	32	18
5V 5	30	60	184	1½	1	1	¾	19	24
5V 6	30	72	220	1½	1	1	¾	25	24
5V 7	30	84	256	1½	1	1	¾	31	24
5V 8	30	96	292	1½	1	1	¾	37	24
5V 9	30	108	328	2	1	1	¾	43	24
6V 6	36	72	317	2	1	1	¾	24	30
6V 7	36	84	370	2	1	1	¾	30	30
6V 8	36	96	423	2	1	1	1	36	30
6V 9	36	108	476	2	1	1	1	42	30
6V10	36	120	529	2	1	1	1	48	30
7V 7	42	84	504	2	1	1	1	26	36
7V 8	42	96	576	2	1	1	1	32	36
7V 9	42	108	648	3	1½	1½	1	36	36
7V10	42	120	720	3	1½	1½	1	42	36
7V12	42	144	864	3	1½	1½	1	54	36
7V14	42	168	1008	3	1½	1½	1¼	66	36
8V 8	48	96	752	3	1½	1½	1	30	42
8V 9	48	108	846	3	1½	1½	1¼	36	42
8V10	48	120	940	3	1½	1½	1¼	42	42
8V12	48	144	1128	3	1½	1½	1¼	54	42
8V14	48	168	1316	4	2	2	1¼	66	42
8V16	48	192	1504	4	2	2	1½	78	42
9V 9	54	108	1070	3	1½	1½	1¼	34	48
9V10	54	120	1190	3	1½	1½	1¼	40	48
9V12	54	144	1430	4	2	2	1½	52	48
9V14	54	168	1670	4	2	2	1½	64	48
9V16	54	192	1910	4	2	2	1½	78	48
10V10	60	120	1469	4	2	2	1½	40	54
10V12	60	144	1763	4	2	2	1½	52	54
10V14	60	168	2057	4	2	2	1½	64	54
10V16	60	192	2351	4	2	2	1½	78	54
12V12	72	144	2538	5	3	3	1½	48	66
12V14	72	168	2962	5	3	3	2	60	66
12V16	72	192	3386	5	3	3	2	72	66
14V14	84	168	4030	6	3	3	2	54	72
14V16	84	192	4606	6	4	4	2	66	72
14V18	84	216	5182	6	4	4	2	78	72
16V16	96	192	6016	6	4	4	2	63	84
16V18	96	216	6768	6	4	4	2	75	84
16V20	96	240	7520	6	4	4	2	87	84

All dimensions in inches. Units furnished with standard NPT screwed connections.

SUBMERGED HEATING EQUIPMENT

Ellicott submerged heating coils are fabricated of materials carefully selected for their efficiency, durability and corrosion resistance. Particular attention is given to material that will minimize erosion and electrolytic corrosion. Every step of fabrication, from closely controlled hydraulic bending to final assembly, is supervised by qualified heat exchanger engineers. Economy is achieved through the standardization of coil design. In the example that follows each part of the coil number is keyed with a small letter. The explanation for these key letters follows the examples:

(A) (B) (C) (D) (E)
4 F V 3 — 2

(A) (B) (C) (D) (E)
5 J V 7 — 2

(a) the nominal diameter of the bundle in inches
(b) the outside diameter of the tubing is indicated as:
  F—for tubes of ¾" outside diameter
  J—for tubes of 1¼" outside diameter
(c) the type of coil construction is indicated as:
  V—for "U" bend tubes
  S—for straight tubes
(d) the amount of external tube surface in square feet
(e) The number of passes

Thus, coil number "8FV20—2" designates an 8" nominal diameter bundle, with ¾" O.D. tubes, "U" bend construction, with 20 square feet of surface and two pass design.

Table for determining Surface Requirements of Submerged Tank Coils in GPH per square foot

TABLE 1: FOR STEAM FACTORS

Temp Degree From	Rise in Fahr. To	STEAM PRESSURE - PSIG 0	5	10	15	20	25	30	40	50	60	80	100
40	100	78	88	95	102	108	114	120	130	138	148	160	172
	120	53	60	64	72	76	81	85	92	99	106	117	128
	140	38	44	49	53	56	60	63	69	73	81	90	99
	160	25	32	36	40	44	47	49	54	59	63	71	79
	180	20	24	27	31	34	37	39	43	47	50	57	63
	200	—	17	20	23	26	29	31	34	38	41	46	52
60	100	100	133	137	146	155	163	169	185	200	215	235	255
	120	66	76	84	91	96	103	108	117	126	135	152	166
	140	44	52	57	62	69	73	76	84	90	96	108	119
	160	30	37	42	45	50	54	57	62	65	72	82	91
	180	20	26	31	34	38	40	42	48	52	56	64	71
	200	—	18	23	26	28	31	34	38	41	45	51	58

EXAMPLE

To calculate the coil surface area in square feet, use the following formula:

$$\text{Sq. ft.} = \frac{\text{Required capacity in GPH}}{\text{Capacity in GPH per sq ft of surface of given conditions}}$$

Example: Determine required surface for 3000 GPH from 40° to 140° with steam at 25 PSIG.

From chart above each sq. ft. of surface will heat 60 GPH under these conditions.

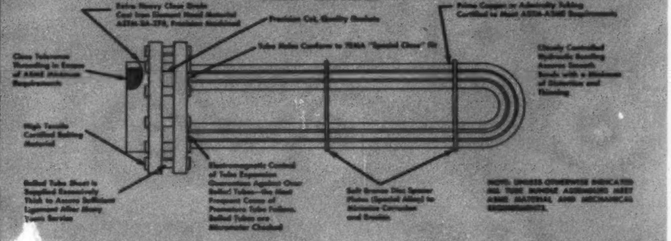
$$\text{Sq. ft.} = \frac{3000}{60} = 50$$

TABLE 2: FOR BOILER WATER FACTORS

	180	200	210	230
40 - 140	9.4	14.3	17.1	20.0
40 - 160	—	8.5	10.8	13.4

The factors in Table 2 are for GPH per square foot of surface. The values are based on boiler water being circulated at a 5 to 1 ratio to heated water. Boiler water velocity is assumed at 2 FPS or greater, which normally is attained by using four pass coils. The factors are for ¾" tubing only.

ELLICOTT COIL DETAILS


Extra Heavy Close Grain Cast Iron Element Head Material ASTM-SA-278, Precision Machined
Precision Cut, Quality Gaskets
Prime Copper or Admiralty Tubing Certified to Meet ASTM-ASME Requirements
Tube Holes Conform to TEMA "Special Close" Fit
Close Tolerance Threading in Excess of ASME Minimum Requirements
Closely Controlled Hydraulic Bending Assures Smooth Bends with a Minimum of Distortion and Thinning
High Tensile Certified Bolting Material
Rolled Tube Sheet is Supplied Excessively Thick to Assure Sufficient Ligament After Many Years Service
Electromagnetic Control of Tube Expansion Guarantees Against Over Rolled Tubes—the Most Frequent Cause of Premature Tube Failure. Rolled Tubes are Micrometer Checked
Salt Bronze Disc Spacer Plates (Special Alloy) to Minimize Corrosion and Erosion

NOTE: UNLESS OTHERWISE INDICATED ALL TUBE BUNDLE ASSEMBLIES MEET ASME MATERIAL AND MECHANICAL REQUIREMENTS.

DIMENSIONS AND CAPACITIES

To determine the proper submerged heating element, the following procedure is recommended:

1) Determine the amount of hot water needed and select the size tank necessary. (The current issue of the 'ASHAE Guide' is regarded as the most accurate source of reference information for determining the amounts of hot water used by various outlets.

2) Determine the square footage of heating surface required from Tables 1 or 2 on Page 8.

3) For horizontal tanks select a coil with not less than the required heating surface (indicated as (D) in the example coil number) which is at least two-thirds the length of the tank but not more than the tank length less 12". For vertical tanks select the longest coil with proper surface that does not exceed the tank diameter.

TABLE 3: FOR 1¼" O.D. TUBES X 16 BWG

Coil No.	GPH 40°-180°F. @ 5 PSIG Steam*	Approx. Length in Inches	Inlet and Outlet Connections
5JV7	140	48"	2"
5JV10	200	67"	
5JV15	300	94"	
5JV20	400	124"	
6JV10	220	48"	2½"
6JV15	330	71"	
6JV20	440	94"	
6JV25	550	117"	
6JV30	660	140"	
8JV15	300	35"	3"
8JV20	400	45"	
8JV25	500	55"	
8JV30	600	65"	
8JV40	800	85"	
8JV50	1000	105"	
8JV60	1200	126"	
8JV70	1400	146"	
10JV20	400	43"	4"
10JV40	800	58"	
10JV50	1000	72"	
10JV60	1200	87"	
10JV70	1400	101"	
10JV80	1600	116"	
10JV90	1800	130"	
10JV100	2000	144"	
12JV50	1000	55"	5"
12JV70	1400	75"	
12JV90	1800	95"	
12JV110	2200	114"	
12JV130	2600	133"	
12JV150	3000	153"	
12JV170	3400	173"	
14JV150	3000	101"	6"
14JV170	3400	114"	
14JV190	3800	127"	
14JV220	4400	147"	

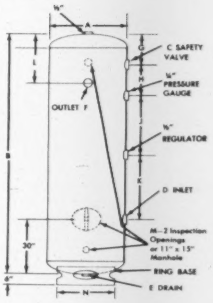
* We do not recommend the use of 1¼" tubes for boiler water service.

TABLE 4: FOR ¾" O.D. TUBES X 18 BWG

Coil No.	GPH 40°-180°F. @ 5 PSIG Steam	Approx. Length in Inches	Inlet and Outlet Connections Steam (2 Pass)	Boiler Water (4 Pass)
4FV3	60	17"	1½"	1"
4FV5	100	27"		
4FV7	140	37"		
4FV9	180	47"		
4FV11	220	57"		
4FV13	260	67"		
5FV5	100	20"	2"	1½"
5FV9	180	26"		
5FV13	260	31"		
5FV17	340	46"		
6FV8	160	23"	2½"	1½"
6FV12	240	35"		
6FV16	320	46"		
6FV20	400	53"		
6FV24	480	60"		
6FV28	560	73"		
6FV32	640	83"		
8FV12.5	250	16"	3"	2½"
8FV15	300	22"		
8FV17.5	350	26"		
8FV20	400	27"		
8FV22.5	450	33"		
8FV25	500	36"		
8FV27.5	550	40"		
8FV30	600	43"		
8FV35	700	50"		
8FV40	800	57"		
8FV50	1000	71"		
8FV60	1200	85"		
8FV70	1400	99"		
8FV80	1600	113"		
10FV35	700	31"	4"	3"
10FV40	800	36"		
10FV50	1000	44"		
10FV60	1200	53"		
10FV70	1400	60"		
10FV80	1600	69"		
10FV100	2000	84"		
10FV120	2400	100"		
12FV80	1600	49"	5"	4"
12FV100	2000	61"		
12FV120	2400	73"		
12FV140	2800	85"		
12FV160	3200	97"		
14FV140	2800	62"	6"	6"
14FV160	3200	70"		
14FV180	3600	79"		
14FV200	4000	87"		
14FV220	4400	96"		
14FV250	5000	109"		

NOTE: Coil connection sizes refer to inlet and outlet of coil header and should not be used to determine the steam supply lines. The diameter of the steam supply lines depend on the length of their run.

AIR RECEIVERS


½"
A
C SAFETY VALVE
G
¼" PRESSURE GAUGE
H
OUTLET F
½" REGULATOR
J
L
B
K
D INLET
M—2 Inspection Openings or 11" x 15" Manhole
30"
6"
RING BASE
E DRAIN
N

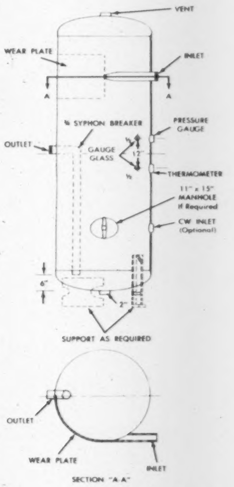
Ellicott Air Receivers are built and stamped in accordance with the A.S.M.E. Code for various working pressures. Six inch ring bases are included (except in Massachusetts, where 12" ring bases are required). All openings 8" or larger are 150# ASA flanges. On all vessels of over 125# working pressure, flanged nozzles are required for openings larger than 3", in accordance with the code requirements. All smaller openings have standard screwed couplings. Vessels of 42" diameter and larger have 11" x 15" manholes. Vessels with diameter of 36" or smaller have two 2" inspection openings. Information on larger sizes or higher working pressures is available on request. Ellicott furnishes air receivers for many of the country's leading compressor manufacturers.

SIZE	A	B	C†	D	E	F	G	H	J	K	L	M	N
18x72	18	72	¾	3	¾	3	10	15	12	21	11	2	12
24x72	24	72	¾	3	1	3	12	16	14	14	14	2	18
30x84	30	84	¾	4*	1	4*	14	16	14	22	16	2	24
36x96	36	96	1	6*	1	6*	15	16	14	30	18	2	30
42x120	42	120	1¼	6*	1	6*	15	21	18	42	20	11x15	36
48x144	48	144	1½	8*	1	8*	18	21	24	51	21	11x15	42
54x168	54	168	2	10*	1¼	10*	22	36	42	32	30	11x15	48
60x168	60	168	2½	10*	1¼	10*	24	24	48	30	32	11x15	54

*Denotes Flanged Nozzle For Vessels Over 125 # WP.

†Based on J. E. Lonergan Co. 11-W-200 Series Valve.

BLOW-OFF TANKS


VENT
WEAR PLATE
INLET
A
A
¾ SYPHON BREAKER
PRESSURE GAUGE
OUTLET
GAUGE GLASS
12"
½
THERMOMETER
11" x 15" MANHOLE If Required
CW INLET (Optional)
6"
2"
SUPPORT AS REQUIRED
OUTLET
WEAR PLATE
INLET
SECTION "A-A"

Blowoff equipment is used in boiler operations to either reduce the boiler water concentration or to lower the boiler water level in a rapid manner. The A.S.M.E. code provides that a safe discharge of water shall not exceed 150° F. and that pressure leaving the equipment shall not exceed 5 psig.

The sizing of the vent in an A.S.M.E. blowoff tank is determined by the area of the boiler blowoff line. The vent should have five times the area of the boiler blowoff line. The ratio of inlet to outlet to vent is 1 : 1 : 5.

It should also be considered that in any A.S.M.E. vessel built for greater than 125 psig. any opening larger than three inch pipe size must be a flanged connection.

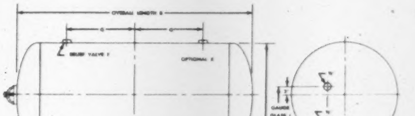
The minimum thickness recommended by A.S.M.E. code is ⅜th inch for shell and heads.

SIZING AND CONNECTIONS

Boiler H.P.*	Tank Size	PIPE CONNECTION SIZES Blowoff	Outlet	Vent
10- 15	18" x 48"	¾"	¾"	2"
15- 30	24" x 60"	1"	1"	2½"
30- 50	30" x 60"	1¼"	1¼"	3"
50- 80	30" x 84"	1½"	1½"	4"
80-125	42" x 72"	2"	2"	5"
125-200	48" x 84"	2½"	2½"	6"

*Sizes shown are suitable for most boilers operating at 100 PSIG and under.

HYDRO-PNEUMATIC TANKS


OVERALL LENGTH B
G
G
RELIEF VALVE F
OPTIONAL E
INLET C
OUTLET C
OUTSIDE DIAMETER A
GAUGE GLASS L
2"
½"
G
G
6"

11" X 15" MANHOLE IN TANKS 42" DIA. AND OVER. 2" INSPECTION OPENINGS IN TANKS UNDER 42" DIA.

NOTE: REFERS ONLY TO ASME DESIGNED TANKS OR WHEN SPECIFIED.

NOTE: OPENINGS FOR CONTROLS LOCATED ON VERTICAL CENTER LINE. LOCATION AND SIZE—DEPENDENT UPON SYSTEM AND TYPE OF CONTROL.

CAPACITY IN GALLONS	OUTSIDE DIAMETER A	OVERALL LENGTH B	C INLET AND OUTLET	DIMENSIONS F	G
500	36	120	2	12	48
600	42	100	2½	15	36
700	42	120	2½	15	42
800	42	132	2½	15	48
900	42	156	2½	15	60
1000	42	168	2½	15	66
1500	54	156	3	20	60
2000	60	168	3	20	64
2500	60	204	3	20	82
3000	72	180	3	24	66
3500	72	204	4	24	78
4000	72	228	4	24	90
5000	84	216	4	30	78
6000	96	192	4	36	63
7000	96	228	4	36	78
8000	96	264	5	36	93
9000	96	300	5	36	99
10,000	96	336	5	36	123

The hydro-pneumatic tank is widely used in the pressure system that is a modernization of the old gravity tank method of water supply. Vessels may be either ASME or Commercial construction as specified.

The minimum safe working pressure of the vessel is generally established at 125 percent of the maximum system pressure. Consequently, on a 60-40 psi system, the tank would be constructed for 75 psi working pressure. The vast majority of hydro-pneumatic tanks are furnished to a minimum of 75 psig working pressure even when a 40-20 psi system is furnished since little economy is achieved by going to lighter materials which are not standard stock items. Suitable corrosion protection may be provided by specifying a lining that will withstand the particular water condition involved. The lining for a specific job will be recommended if Ellicott is provided with a complete water analysis from the given source.

Corrosion Controlled Materials

NOVELON *Linings*

PLASTIC LININGS—Baked-on plastic linings are thermosetting plastic coatings that are the most successful anti-corrosion measures developed for steel tanks. There are five basic advantages in their use: (1) low initial cost, (2) high resistance to heat, (3) smooth, non-porous, easy to clean surface, (4) no color, odor or taste imparted to contents, and (5) excellent resistance to deterioration. Vinyl, phenolic and epoxy resins are furnished depending on the temperature conditions and fluid media.

PLASTIC SHEET LININGS—heavier sheet plastics, such as PVC are used for severely corrosive fluids.

PLASTISOLS—seamless; cured—afford maximum resistance to chemicals.

RUBBER LININGS—Neoprene and natural rubber in sheet or liquid form; air dried or heat cured.

COPPER LININGS—of sheet copper, with expansion joints and openings of copper silicon.

CEMENT LININGS—water-resistant, hydraulic cement and silica composition of thicknesses from ½″ to 1″, with or without metal lath reinforcement.

Correct application technique is the secret of the long life of Novelon Linings. Ellicott's modern facilities include large baking and curing ovens, dust-free application room, highly skilled personnel and rigid quality control measures. A variety of sandblasting techniques and grits are available for the proper preparation of surfaces before lining. A lining or protective coating is only as good as the application.

Special METALS

As a pioneer in the anti-corrosion field, Ellicott has successfully solved many problems involving the use of steel alloys and non-ferrous metals in the fabrication of vessels and entire systems. Some of the more important special metals and alloys are:

Copper Silicon—particularly recommended for water storage, because of its fine corrosion-resistant properties.

Clad Steels—inseparably bonded steel and claddings of corrosion resistant Nickel, Monel, Copper and the various stainless steels offer long life.

Stainless Steel—a wide selection is available possessing high strength, good ductility, oxidation resistance and good abrasion resistance.

Aluminum—gives light-weight construction and freedom from rust or tarnish. Many strong alloys and clads of aluminum are now available.

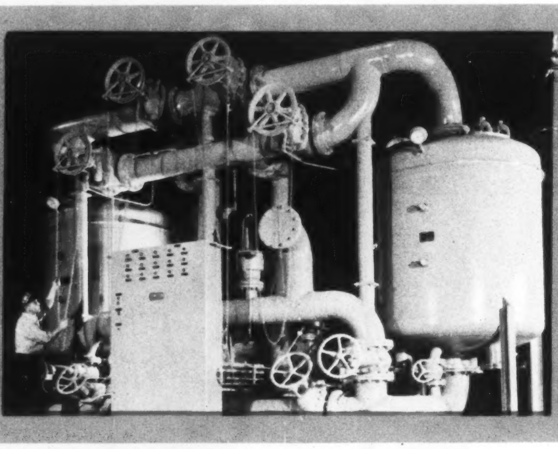
Nickel—particularly resistant to alkalies, such as caustic soda, caustic potash; salts, both acid and alkaline.

Monel—a strong and ductile alloy of copper and nickel that is resistant of all kinds of water, acids and salts.

Inconel—an alloy of Nickel, Chromium and Iron that is extremely resistant to scaling at high temperatures.

Ellicott special fabrication

Ellicott has the ability and experience to do a wide range of special fabrication work. Our experience includes manual and automatic welding of most types of metals, alloys and clads to meet ASME, API and other exacting codes. The Novelon Lining department offers unmatched experience in solving almost any corrosion problem. In conjunction with our parent company, the Ellicott Machine Corporation, we can offer complete heavy machine shop facilities. Call for a qualified Sales Engineer to help work out the details on your next fabrication project.



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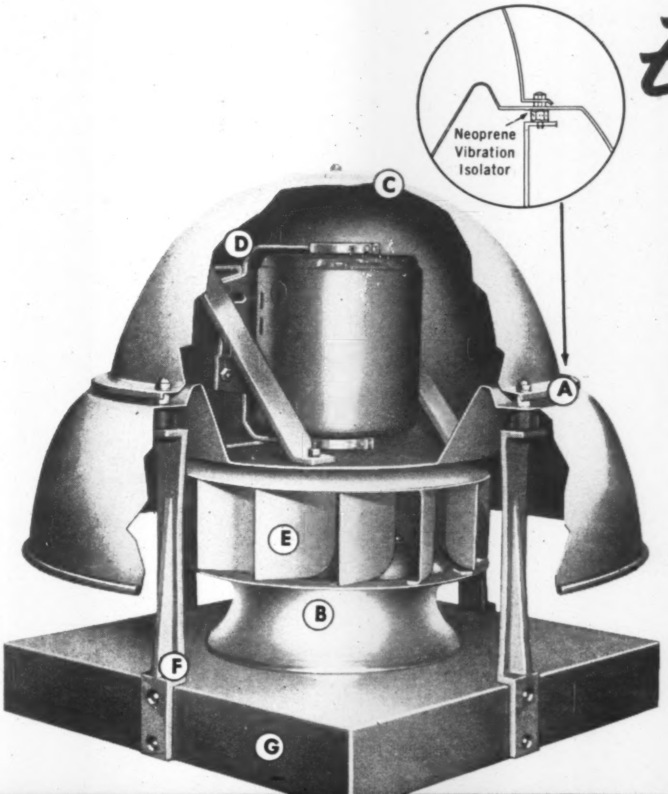
Feature by Feature...
COMPARE
Exit-Aire



the complete line of power roof ventilators

ExitAire exhausters are designed and built to provide the finest ventilation available at modest cost. Compare the unprecedented performance features of the ExitAire with those of other ventilators!

A. NEOPRENE VIBRATION ISOLATORS for silent operation (see illustration at left). Motor compartment is supported by 4 rugged cast aluminum brackets, insulated from vibration to curb by individual Neoprene "sandwich" dampeners. Motor is resiliently mounted. No need for rubber curb mountings.

B. NEW "AIRE-FLOW" INLET CONE similar to centrifugal blower-type for maximum efficiency with air turbulence reduced to a minimum. Allows use of smaller wheel which is quieter in operation and easier to keep in balance.

C. LOW SILHOUETTE conforms with modern architecture!

D. DISCONNECT SWITCH provided for mounting in motor compartment. Standard on single speed unit 10" and larger.

E. NEW WHEEL DESIGN delivers more capacity, horsepower for horsepower, than conventional wheels! Small size enhances balance.

F. CURB-MOUNTED BRACKETS! For extra rigidity, unit is suspended by 4 cast-aluminum brackets attached directly to the curb.

G. COMPLETE CURB MOUNTING! An integral part of unit, no extra cost!

ExitAire Specified for Engineering Building, Cal-Poly College, Pomona, California.

This installation of 15", 18" and 24" ExitAire Power Roof Ventilators is typical of many jobs all over the country where ExitAires have been chosen because of their higher efficiency per ventilating dollar.

CERTIFIED RATINGS

AMCA

EXITAIRE GIVES YOU CERTIFIED PERFORMANCE RATINGS, TOO!

ExitAire Power Exhausters carry the Certified Rating Seal of the Air Moving and Conditioning Association... Underwriters' Laboratories, Inc. listing on most power units. You can be *sure* when you specify ExitAire!

Compare—you'll buy ExitAire!

Write for Bulletin 458. A.I.A. File No. 12K2 with complete specifications and engineering data.

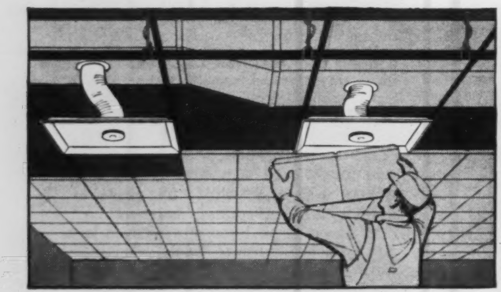
Exit-Aire COMPANY
P. O. Box 276, Pacoima, California

MULTI-VENT®

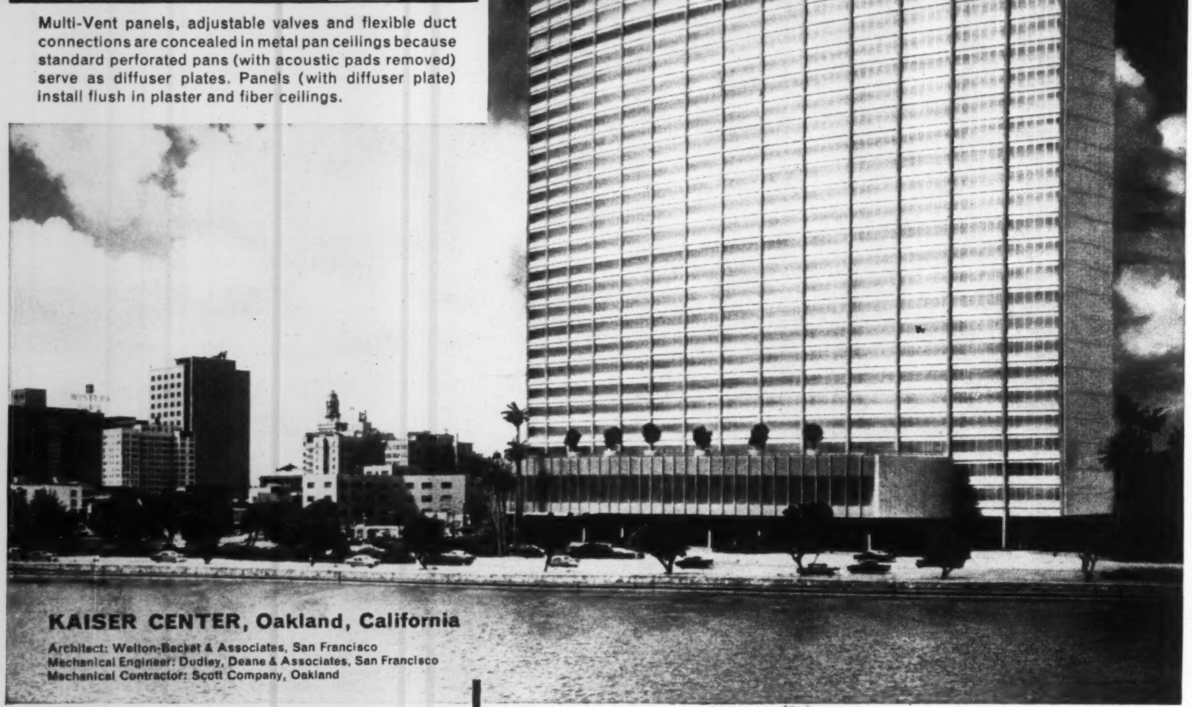
low velocity air diffusers specified for the West's largest office building

Multi-Vent will handle the air distribution in over 70% of Kaiser Center's office building, the largest west of the Mississippi, scheduled for completion late in 1959.

Multi-Vent is the ideal air diffuser for office space because it need never be moved, or even adjusted when partitions are relocated. Distributing air at low velocities by gentle pressure displacement, Multi-Vent provides truly sightless, soundless, imperceptible air conditioning comfort, unmatched by any other diffuser.



Multi-Vent panels, adjustable valves and flexible duct connections are concealed in metal pan ceilings because standard perforated pans (with acoustic pads removed) serve as diffuser plates. Panels (with diffuser plate) install flush in plaster and fiber ceilings.



KAISER CENTER, Oakland, California

Architect: Welton-Becket & Associates, San Francisco
Mechanical Engineer: Dudley, Deane & Associates, San Francisco
Mechanical Contractor: Scott Company, Oakland

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Write for detailed literature.

THE PYLE-NATIONAL COMPANY
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WHERE QUALITY IS TRADITIONAL
1373 N. Kostner Avenue, Chicago 51, Illinois

SALES AGENTS IN PRINCIPAL CITIES OF THE UNITED STATES AND CANADA

stop wasting money on '*throw-aways*' with new

A-Lum-O-Aire Copper FILTERS

designed for industrial air-cleaning requirements

All standard ½", 1" and 2" sizes or built to your specifications.

Enlarged section showing mat, retainer and frame construction. Frames are aluminized steel for extra strength and light weight.

Typical of hundreds of Old World structures with copper roofs and spires, the Cathedral of Canterbury (England) has withstood the elements for centuries without evidence of decay or deterioration. Nothing resists weather like copper; nothing resists corrosive atmospheres like A-LUM-O-AIRE COPPER Filters!

RESISTS RUST and CORROSION

Impervious to hazardous industrial atmospheres, new A-LUM-O-AIRE COPPER Filters are the practical solution for handling corrosion and moisture-laden fumes, vapors and gases. Copper wool, used as the filter media, is manufactured by Carey to precision standards from special alloys developed expressly for air cleaning. Mat retainers are copper plated for longer life with added protection against rusting and corrosion.

QUICKLY CLEANED for CONTINUOUS USE

Simply flush A-LUM-O-AIRE COPPER Filters with water or solvent and replace. No hazardous oils to add; no messy adhesives required. END pyramiding filter replacement costs NOW with the filter designed for the rugged demands of industry. Available in standard and high-velocity types for normal resistance or engineered to your specific size and capacity requirements.

Carey
ELECTRONIC ENGINEERING CO.
METAL WOOL DIVISION
SPRINGFIELD, OHIO

"world's largest manufacturers aluminum and copper wool"

If filtered air is important to your production or operating schedules, here NEWS you can't afford to pass up! Why? Because A-LUM-O-AIRE COPPER Filters save on replacements, eliminate maintenance expense and increase air cleaning efficiency!

Like to see the proof? Then, write for folder showing typical performance curves and operating data — or send us your specifications with prints or detailed drawings for prompt recommendations and quotations. No charge or obligation, of course!

America's *first* practical recleanable all-metal, dry-type air filter! Approved by Underwriters (Class 1)!

A-Lum-O-Aire

MAIL THIS COUPON TODAY

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1880 Clifton Avenue
Springfield, Ohio

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Tell me more—
about your new A-LUM-O-AIRE Filters and show me how we can save money on our air-cleaning activities.

Name________________ Title________
Company________________
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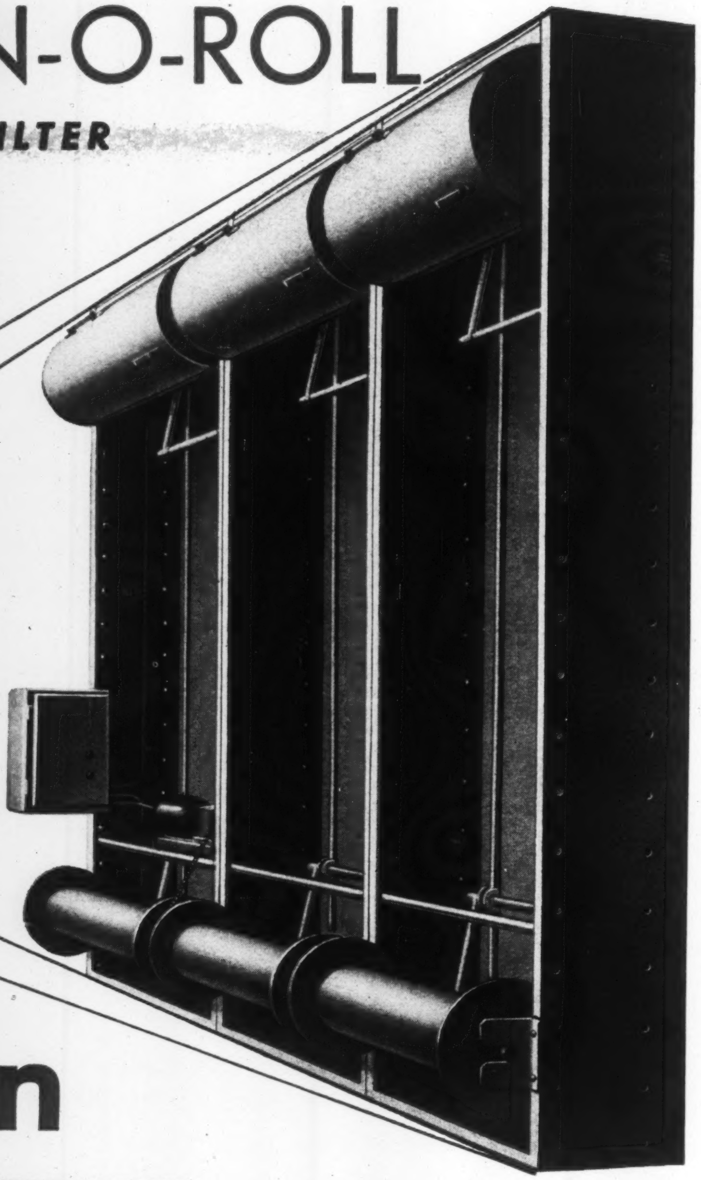
EASY to install — completely prewired — takes a minimum of working space

Green ECON-O-ROLL

AUTOMATIC AIR FILTER



Green's ECON-O-ROLL Automatic Air Filter can be installed by ordinary labor since no special skills are required.

The electrical control panel is completely prewired, eliminating the need for costly on-the-job wiring. Since ECON-O-ROLL filter sections are shipped completely assembled, installation requires only setting the sections in place, bolting to fan station enclosure and bringing electrical power source to the control panel.

There are many types of control systems available from which to choose.

For additional information, write for our Bulletin #176.

Green

THE GREEN FUEL ECONOMIZER CO., INC.

BEACON 3, NEW YORK

...for commercial air conditioning

H & C HAS THE REGISTERS AND GRILLES TO IDEALLY MEET EVERY AIR CONTROL REQUIREMENT

The ease with which any desired airflow, both directionally and volumetrically, can be obtained with these registers and grilles is one reason they have become exceedingly popular. The wide range covered by the quickly obtainable standard sizes is another (380 combinations). Fine appearance, excellent construction and absolutely reliable engineering data are other elements that are making this H&C line first choice of a host of air conditioning dealers for all of their commercial installations. See your H&C Jobber or write for our current Catalog.

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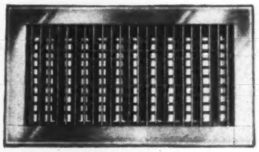
EACH AVAILABLE IN 26 STOCK SIZES PLUS "ON-ORDER" SIZES TO MEET EVERY REQUIREMENT



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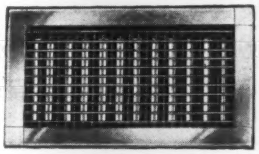

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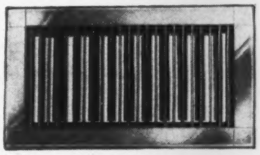

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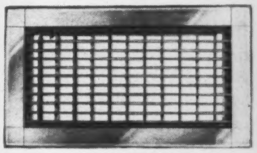

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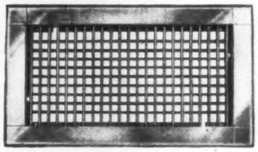

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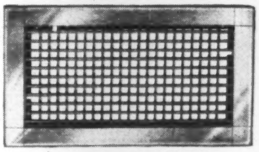

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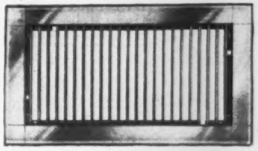

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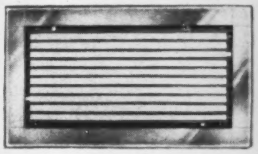

No. 92HOO SINGLE DEFLECTION GRILLE

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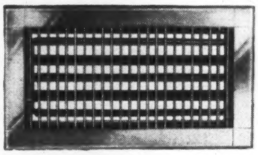
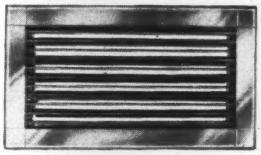
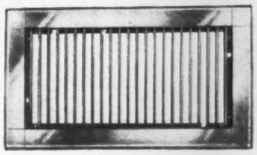
EACH AVAILABLE IN 17 STOCK SIZES PLUS "ON-ORDER" SIZES TO MEET EVERY REQUIREMENT



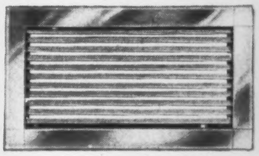
No. 93V RETURN AIR REGISTER



No. 94V RETURN AIR REGISTER



No. 93 RETURN AIR GRILLE



No. 94A RETURN AIR GRILLE

Letters following stock numbers (V-Vertical, H-Horizontal) indicate direction of 1: Face bars, 2: Secondary bars, 3: Louvers.

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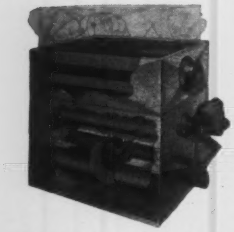
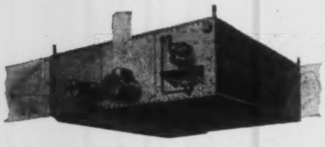
WARM AIR HEATERS FOR LARGE BUILDINGS

Campbell Heaters make it easy to use warm air heating in large buildings. Easy to install, compact, dependable and low in cost.

Our Engineering Department is at your service. Send us your preliminary plans and ideas and we will be glad to help you work them out.

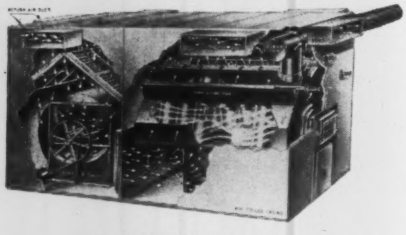


HI-BOY UNIT HEATER



HORIZONTAL UNIT HEATER

LO-BOY HEATER



8000 *SERIES HEATER*

SPECIFICATIONS and DIMENSIONS

Hi Boy & Horizontal Unit Heater—Oil & Gas for Churches, Schools, Commercial & Industrial Buildings

HEATER				BLOWER‡			MAX. FUEL RATE§				DIMENSIONS		
Unit No.•	Output Capacity BTU/Hr. †	Heating Surface Sq Ft	Btu per Sq Ft Heating Surface	Normal cfm 140° Dischg. Temp.	Assumed External Static In. Water	Motor hp	Oil gph	1000 Btu Gas cfh	LP Gas gph	Coal Lbs Per Hr.	H in.	L in.	W in.
U225	225,000	84	2700	2750	½	½	2.0	280	2.8		66	48	23
U275	275,000	84	3300	3350	½	¾	2.5	350	3.5		66	48	23
U325	325,000	121	2700	4000	½	¾	2.9	400	4.0		72	54	29
U400	400,000	121	3300	4900	½	1	3.6	500	5.0		72	54	29
U500	500,000	182	2750	6100	½	1	4.5	625	6.3		84	60	34
U600	600,000	182	3300	7300	½	1½	5.4	750	7.5		84	60	34
U700	700,000	244	2850	8500	½	2	6.2	875	8.8		99	78	40
U800	800,000	244	3300	9800	½	2	7.2	1000	10.0		99	78	40
U950	950,000	334	2850	11,600	½	3	8.5	1200	12.0		108	96	48
U1100	1,100,000	334	3300	13,500	½	3	9.8	1375	13.8		108	96	48
U1300	1,300,000	455	2850	16,000	½	3	11.6	1625	16.3		126	114	54
U1500	1,500,000	455	3300	18,500	½	5	13.4	1875	18.8		126	114	54

Lo Boy Oil & Gas Fired for Large Residences, Small Churches, Schools, etc.

Unit No.•	Output Capacity BTU/Hr. †	Heating Surface Sq Ft	Btu per Sq Ft Heating Surface	Normal cfm 140° Dischg. Temp.	Assumed External Static In. Water	Motor hp	Oil gph	1000 Btu Gas cfh	LP Gas gph	Coal Lbs Per Hr.	H in.	L in.	W in.
H200	235,000	100	2350	2600	½	½	2.1	293	2.9		52	75	41
H250	275,000	125	2200	3300	½	¾	2.5	344	3.4		57	85	41
H300	340,000	136	2500	4000	½	¾	3.0	425	4.2		61	87	50
H350	400,000	152	2600	4600	½	1		500	5.0		61	87	50
H400	450,000	167	2700	5300	½	1½	4.0	560	5.6		61	87	50
H500	500,000	200	2750	6600	½	1½	4.5	625	6.2		74	91	60
H600	650,000	240	2700	8000	½	2	5.8	810	8.1		76	97	60
H700	750,000	280	2700	9200	½	2	6.7	940	9.4		72	104	80

8000 Series Oil, Gas, Stoker or Hand Fired For Large Schools, Churches, etc.

Unit No.•	Output Capacity BTU/Hr. †	Heating Surface Sq Ft	Btu per Sq Ft Heating Surface	Normal cfm 140° Dischg. Temp.	Assumed External Static In. Water	Motor hp	Oil gph	1000 Btu Gas cfh	LP Gas gph	Coal Lbs Per Hr.	H in.	L in.	W in.
8032	400,000	133	3000	5300	½	1.0	3.6	500	5.0	45	66	94½	51
8046	500,000	167	3000	6600	½	1½	4.5	625	6.3	56	66	105	51
8060	600,000	200	3000	8000	½	1½	5.4	750	7.5	67	66	126	51
8074	700,000	233	3000	9200	½	1½	6.3	875	8.8	78	66	134	51
8075	840,000	280	3000	11,000	½	2	7.5	1050	10.5	100	80	140	76
8100	960,000	320	3000	12,500	½	2	8.6	1200	12.0	114	80	157	76
8125	1,080,000	360	3000	14,100	½	2	9.7	1350	13.5	129	80	180	76
8150	1,320,000	440	3000	17,300	½	3	11.8	1650	16.5	157	80	198	76
8175	1,440,000	480	3000	18,900	½	3	12.9	1800	18.0	171	80	210	76
8200	1,800,000	600	3000	23,600	½	5	16.1	2250	22.5	214	100	227	94
8250	2,250,000	750	3000	29,500	½	5	20.1	2810	28.0	268	100	252	94
8300	2,700,000	900	3000	35,400	½	5	24.1	3380	33.8	320	118	268	104
8350	3,150,000	1050	3000	41,300	½	7½	26.1	3940	39.4	375	118	268	114

† Based on 80% thermal efficiency for oil and gas and 70% for coal. Add 10% to 35% over calculated heat loss for pick-up load and 10% to 15% for duct radiation losses. The higher figure is preferable for best operating economy and life of the equipment.

‡ For other air volumes and static pressures consult our Engineering Department.

§ An induced draft blower can be furnished if a stack or chimney is not available. The gas passages of the heaters are adequate so an induced draft blower is not ordinarily needed.

For Complete Specifications, See *Sweet's Catalog Service*

CAMPBELL HEATING COMPANY

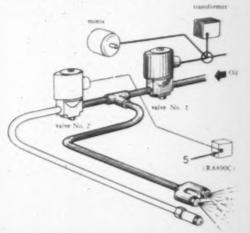
Des Moines 17, Iowa

2 NEW ACCESSORIES

for high input oil burners

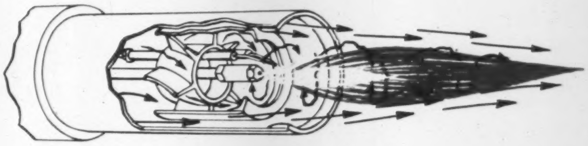
D-LAY-FLO*... insures smooth, quiet starts even at 40 g.p.h.

D-Lay-Flo, optional on Nu-Way burners firing 6 to 40 g.p.h., effectively prevents the "hard starts" occasionally experienced with large inputs of light oil. Valve #2 holds back one-third of oil capacity approximately 15 seconds . . . time for flame and flue gas travel to be established. Result: quiet starts. Then valve #2 opens, automatically giving full capacity. Nu-Way's carefully designed D-Lay-Flo air handling parts makes air modulation unnecessary. Only familiar, time-tested components are used in this assembly . . . greatly simplifying installation and service.

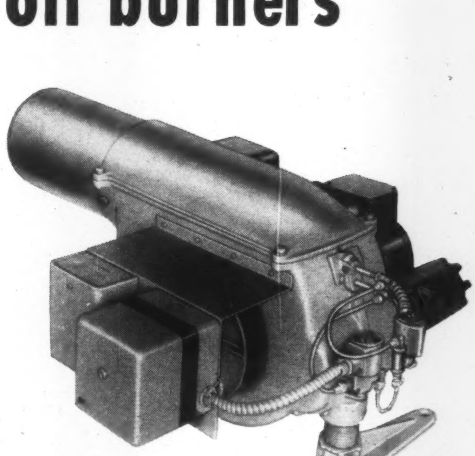


*TM

Narrow flame... for narrow or limited combustion areas



Nu-Way burners with Narrow Flame are truly the answer for direct fired furnaces and Scotch marine boilers . . . in fact for any application that needs a long, narrow flame. Thanks to tube-within-a-tube construction, a wall of higher velocity secondary air at the circumference molds the flame to a long, slim shape. Insures stable flame bases . . . most efficient combustion. Here's a unique accessory that will prove a must in many cases.



For descriptive literature, write Dept. HP-159.

THE Nu-Way CORPORATION
Heating Equipment
Rock Island, Illinois

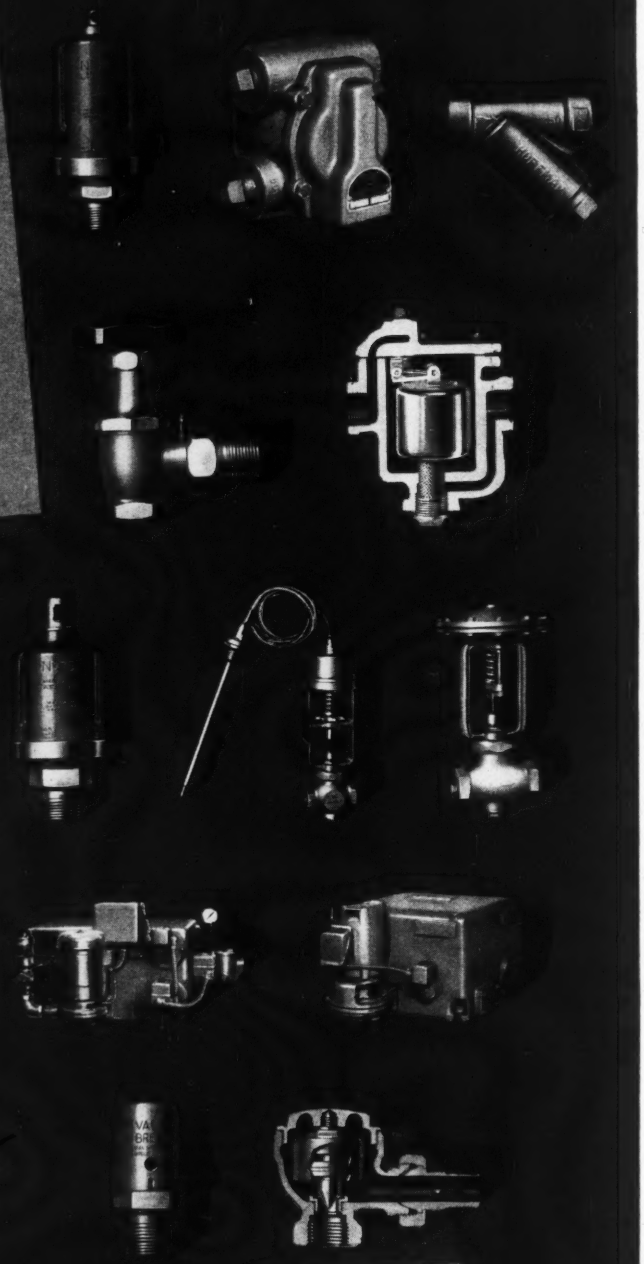
ALSO ASK US ABOUT Sundstrand ALL-ELECTRIC BURNERS

...for better control of every steam system requirement

HOFFMAN

STEAM SPECIALTIES

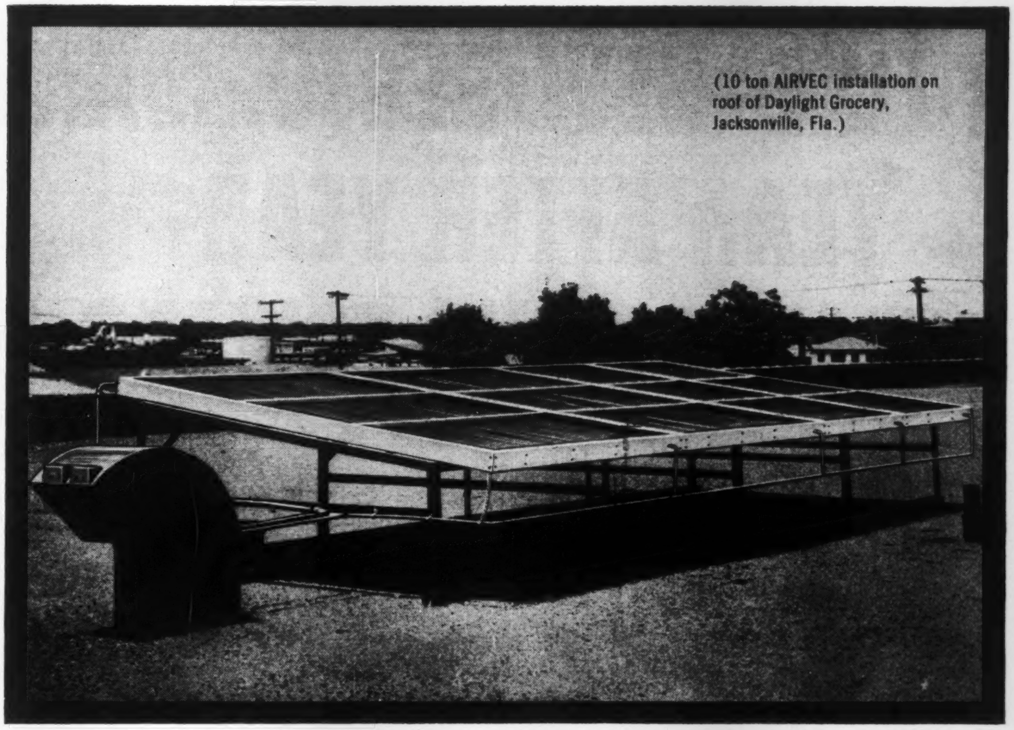
Each Hoffman product is distinguished by exclusive features that assure customer satisfaction—long carefree service. For either one-pipe or two-pipe residential or industrial systems there's a Hoffman Trap, Valve, Pump or other specialty designed to give you better control of every requirement. This complete, tested quality line is backed by a dependable, single source of supply and responsibility. Write for complete catalog.



HOFFMAN SPECIALTY MFG. CORP.

3700 WEST 10TH STREET INDIANAPOLIS 7, INDIANA

HOFFMAN GUARDIAN OF YOUR HEALTH AND COMFORT



(10 ton AIRVEC installation on roof of Daylight Grocery, Jacksonville, Fla.)

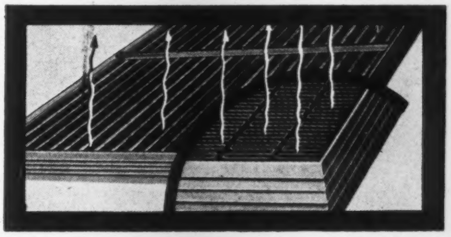
EDWARDS AIRVEC

...the air-cooled refrigerant condenser that eliminates fans, cooling towers, noise and maintenance.

For condensing refrigerants Edwards AIRVEC offers a simple, economical method that makes possible, for the first time, the elimination of fans, motors, and cooling towers! Because of its unique operating principle, AIRVEC requires no electrical power—the refrigeration or air conditioning system using AIRVEC requires 20% less power. With no moving parts there is no need for belts, pumps, fans or costly maintenance—and it's absolutely silent. And water is not used in the AIRVEC so there is no water treatment problem or periodic cleaning of condensers and towers.

The size of the condenser is virtually unlimited: you just assemble single AIRVEC elements in a single plane until the required area is covered. Initial installation costs are lower, too. And AIRVEC is so light that little or no special rigging is required.

Its low, unobtrusive silhouette blends easily with any architecture, leaving more useable space within the building proper. Roof loads are negligible so no extra beams are needed. Edwards AIRVEC Condensers are available in nominal sizes of 1.25, 2.50 and 3.75 tons and larger assemblies up to hundreds of tons.



The refrigerant gas is cooled and condensed by the movement of convection air moving upward through the AIRVEC condenser.

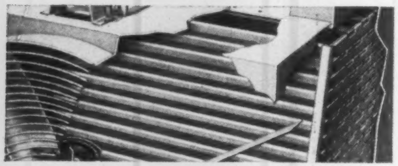
Write today for comprehensive technical data.

EDWARDS ENGINEERING CORP.
1908 Alexander Avenue • Pompton Plains, New Jersey
Telephone TEmple 5-2808 · TEmple 5-3352

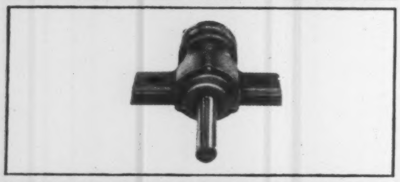
SO HALSTEAD & MITCHELL ENGINEERS SAID . . .

FOR LIKE-NEW PERFORMANCE YEAR AFTER YEAR— H&M COOLING TOWERS

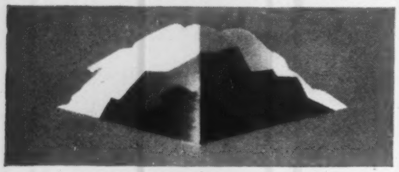
Halstead & Mitchell Cooling Towers give rated performance even after years of operation



Special pressure creosoting of the wood fill prevents formation of fungus and algae which can build up and restrict the tower air flow, reducing system capacity. Only Halstead & Mitchell Cooling Towers carry a 20-Year Guarantee against failure due to fungus attack or rotting.



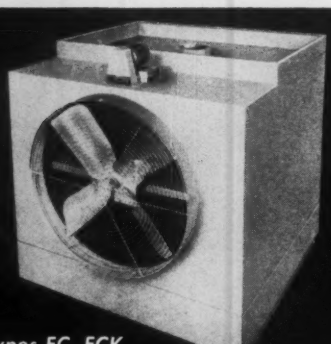
Sealed fan bearings are permanently lubricated, require no maintenance.



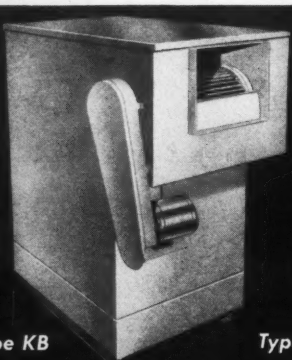
Tower housings are completely protected against corrosion by separate coatings of Vinsynite, Vinyl zinc chromate, and chlorinated rubber applied *after assembly*. Every edge, every corner is sealed against rust on all H&M Cooling Towers.

H&M Cooling Towers are available in propeller fan, centrifugal fan, belt drive, direct drive, and take-apart models. Capacities of 2 through 125 tons. For complete information contact your local distributor, or write to Halstead & Mitchell, Bessemer Bldg., Pittsburgh 22, Pa.

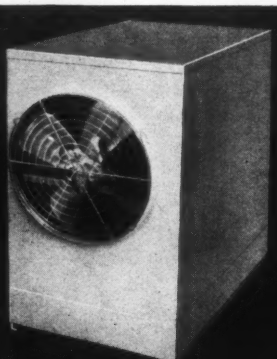
HM
Halstead & Mitchell



Types EC, ECK



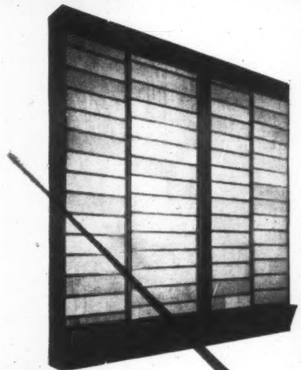
Type KB



Type ECD

COOLING TOWERS · WATER-COOLED CONDENSERS · AIR-COOLED CONDENSERS · FINNED COILS

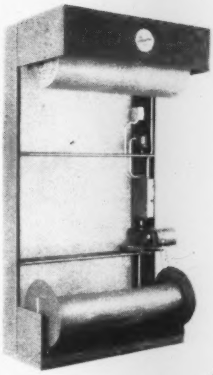
'round the world...
CONTINENTAL *clears the air*



SELF-CLEANING AUTOMATICS

Patented media design and unique "soak-then-flush" action provide thorough self-cleaning. Ferris-wheel feature eliminates reversing media to direction of air flow in back curtain—no dust can be blown back into clean air stream.

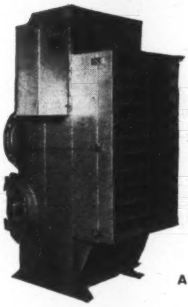
Ask for catalog #210



CONOMATIC
ROLL-AWAY TYPE

Automatically controlled, clears air at lowest cost per cubic foot of any filter in its classification. Dependable automatic performance with minimum of maintenance attention.

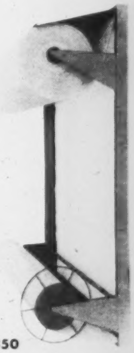
Ask for catalog #802



HEAVY DUTY ENGINE AIR INTAKES

All advantages of Continental's Self-Cleaning Automatics assure maximum protection with minimum maintenance cost and effort.

Ask for catalog #100

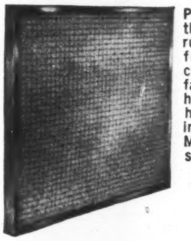


CONOMANUAL
hand-operated

A roll-away, synthetic media, viscous impingement filter . . . hand-operated to combine maximum economy with roll-away convenience.

Ask for catalog #850

AIR
CONTINENTAL
FILTERS



TYPE DY DYCON

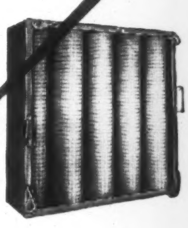
Permanent 1" synthetic fiber filter in rust-proof aluminum frame easily rinses clean under open water faucet or nozzleless hose. Exceptional dust-holding capacity means infrequent servicing. Made in any desired size.

Ask for catalog #57

E-Z-WASH UNIT FILTERS

Continental's patented media assures high efficiency, easy washing, freedom from clogging, and exceptional dust-holding capacity.

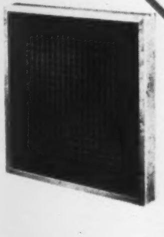
Ask for catalog #423



DYCON
CA-20, CA-24

Oil-free, synthetic media of these extended-surface unit filters effectively traps and holds dust by accumulated static charge. Large dust-holding capacity. Choice of various media blankets to provide degree of efficiency desired. Easily rinsed for re-use — cuts maintenance costs.

Ask for catalog #450



TYPE LV SCREEN WIRE

Graduated mesh-size in this formed screen wire filter adds efficiency and dust-holding capacity. Viscous impingement, low velocity type. Available in 2- or 4-inch thickness, all standard sizes. Special sizes on order.

Ask for catalog #600

For simple finger-tip re-oiling of viscous-type unit filters after washing . . .

E-Z-OIL AEROSOL BOMB

E-Z Oil
Air Filter Oil

E-Z-WASH GREASE FILTERS

All aluminum highly efficient, permanent-type filters for kitchen exhaust systems. Easily washed — once through an automatic dish washer and they are like new again.

Ask for catalog #700

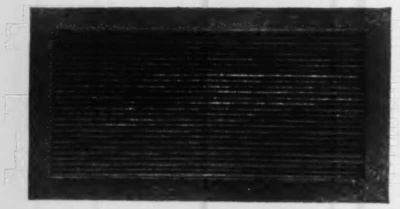
CONTINENTAL
AIR FILTERS, Inc.
P.O. Box 1647, Louisville 1, Kentucky

REFER to catalog in Sweet's Architectural File, or CONTACT the Continental Sales representative in your city, or WRITE direct for catalogs, estimates, other information.

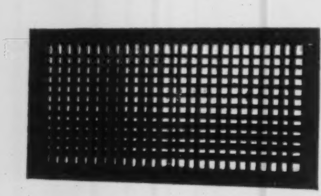
A-J

REGISTERS GRILLES DIFFUSERS ACCESSORIES

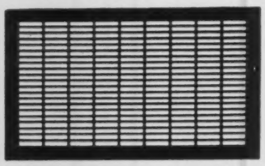
FOR EVERY HEATING AND AIR CONDITIONING NEED



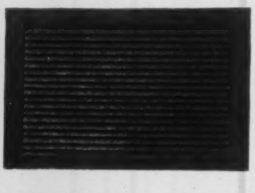
No. 77 Thin Core Grille. **All steel, no-vision. Core only—No. 77-C. Two framed styles—No. 77-A (channel frame); No. 77-B (flange frame). Auxiliary frame optional for No. 77-B style, adjusts from 1/4" to 3/4" depth.**



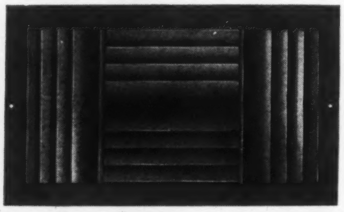
Model 400 VH Air Conditioning Grilles. **Exclusive features include extruded aluminum vanes, individually adjustable; spring load tension foils tampering, accidental change of flow pattern; wrap-around frame gives greater strength; vertical, horizontal or combination louver arrangement. Wide size range available.**



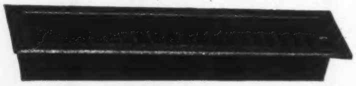
A-J Architectural Grilles **are available in slotted designs B and C, and square meshes of 1/2, 5/8, 3/4 and 7/8 inches. The grilles can be made to your exact order from steel, aluminum, bronze, monel or stainless. There is practically no size limitation. See A-J illustrated catalog for specifications.**



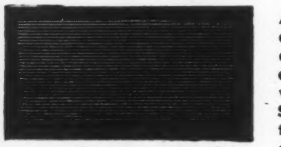
A-J No. 42 Series Return Air Grilles. **Available with either horizontal (42-H) or vertical (42-V) face bars on 1/2 inch centers, 45° deflection for minimized see-through. Depth 13/16 inch. All steel, gray prime finish. No. 432 has multiple valve body, removable handle; with opposed blade damper, No. 442.**



A-J No. 200 Series Ceiling and Side Wall Diffuser. **Available in a wide range of deflection patterns. Standard construction is steel frame with extruded aluminum, adjustable, curved face bars which are 1 1/4 inches wide on 3/4 inch centers. Overall size is 1 3/4 inches greater than duct size. Approximately 75% free area. Platinum enamel finish. With multiple valves, No. 230; with opposed blade damper, No. 240.**



A-J No. 55 Diffusing Perimeter Floor Registers. **Heavy gauge curved vanes are factory set to deliver a fan-shaped air pattern. Valve louvers may be set with special lock screw after system is balanced.**



A-J No. 75 Grille. **For dark room or other application which requires ventilation without light or sight. Steel construction throughout. Free area approximately 60%. With flange frame, No. 75-B; with channel frame, No. 75-A. Depth of No. 75-B grille, 1 3/4 inches. Spans 3 1/8 inches with standard auxiliary frame. Non-specular black only.**

The products above are only a few of the items manufactured for heating and air conditioning requirements by A-J Manufacturing Company. For complete information on the full A-J line, write for FREE catalog.

A·J Manufacturing Co.

Dept. H-1 **3601 East 18th Street**
Kansas City 27, Missouri

"We just don't worry about chipping or flaking when we lock-seam WEIRKOTE®!"

If those difficult lock-seaming operations give you trouble, it's time to take the step that leading manufacturers everywhere are taking.

Switch to Weirkote zinc-coated steel as promptly as you can.

Weirkote's continuous process integrates the zinc and the steel so that the most complicated forming operations are made without chipping or flaking. Weirkote can be worked to the very limits of the steel itself—spinning, deep drawing, crimping, twisting, the works. Comes through in perfect shape to give your products lasting anti-corrosion protection, such as they've never had before.

Weirkote's made that way to behave that way.

Can you think of a quicker, easier step to an even better product? To fewer rejects? To more peace of mind? To lower costs? And, perhaps most important, to the greater good will of customers who receive even more value for their money?

Write today for the free booklet that will give you lots of food for thought on the many advantages Weirkote can bring to your products and production. Weirton Steel Company, Dept. M-1, Weirton, West Virginia.

WEIRTON STEEL COMPANY

WEIRTON STEEL COMPANY

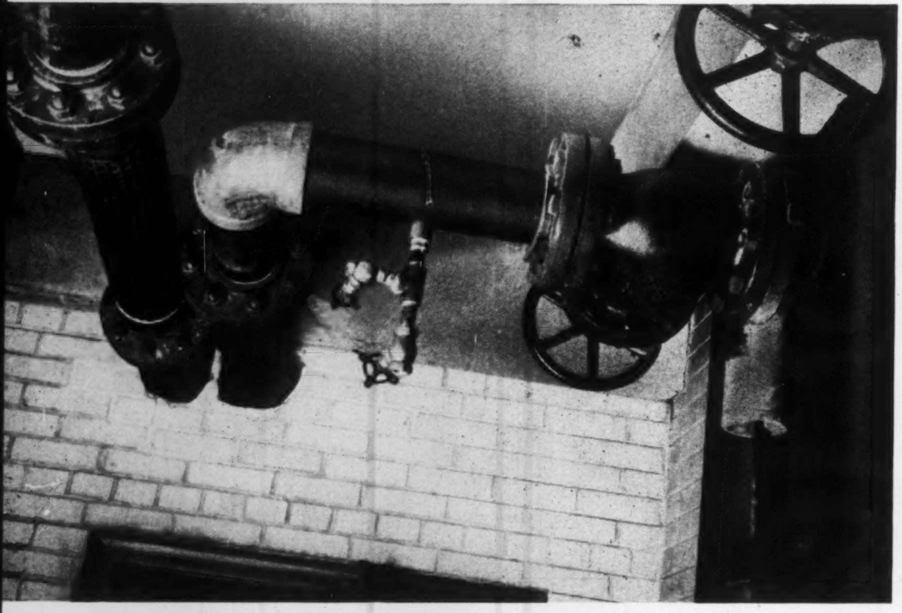
WEIRTON, WEST VIRGINIA

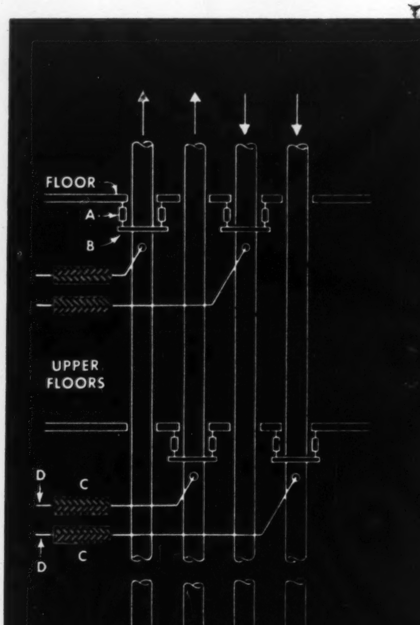
a division of

NATIONAL STEEL CORPORATION

APPLICATION HINTS:

Ways to simplify construction and cut costs with Flexpipe





SCHEMATIC DIAGRAM showing how cooling-water risers were installed. A: spring hangers. B: pipe clamps. C: Flexpipes. D: branch pipes at each floor. 1, 2, 3, and 4: risers, 10 inches in diameter. *Upper left:* Photo of Flexpipe installation at a lower floor.

Flexpipe helps meet tough piping problem in air conditioning an existing building

THE PROBLEM: Air conditioning an existing office building usually calls for a bit of ingenuity in design. One large New York office building decided to air condition by making provision for packaged, water-cooled units to be installed on any floor as tenants required.

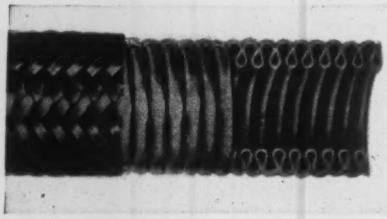
This called for four 10-inch risers, running the height of the building, to carry cooling water between the cooling tower and the branch pipes at each floor level. Because of structural conditions, the risers could not be run down through the basements and supported from below. The combined weight of pipes and the water was so great that they could not be anchored at any one point on the structure.

So the consulting engineers, Zimmermann Engineering, New York, floated the risers on spring hangers, distributing the weight evenly over all floors. This meant, however, that the risers were free to move. A riser full of water weighs several tons more than an empty one and settles about two inches.

Therefore connections between risers and branch pipes had to be flexible. They also had to have strength, because water pressure at the lower floors approaches 400 psi.

THE SOLUTION: Flexpipe connectors were the answer. They provided the flexibility and the strength required. Furthermore, they were available in the sizes needed —from 5″ diameter at the lower floors to 2″ at the top floors.

WHERE TO BUY: Flexpipe connectors come in convenient standard sizes and are sold by leading distributors. They can show you samples and answer questions about service applications. For the name and address of the one serving your area, or for more detailed information, write to: The American Brass Company, American Metal Hose Division, Waterbury 20, Conn. In Canada: Anaconda American Brass Limited, New Toronto, Ont. 58226



FLEXPIPE'S flexible core can be either tin bronze, hot dipped galvanized steel or stainless steel. End fittings (attached): flanges, threaded males and welding nipples.

Flexpipe® an ANACONDA® product

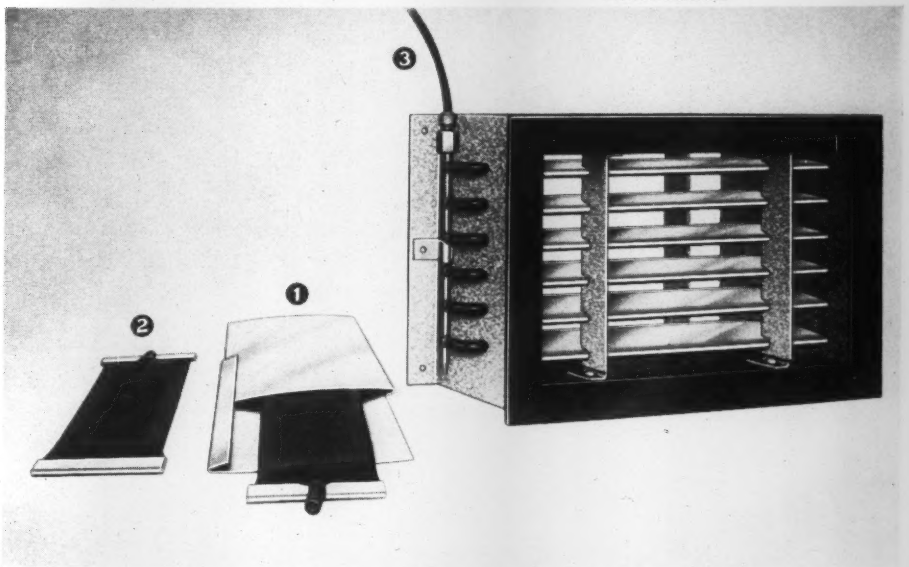
made by The American Metal Hose Division
of The American Brass Company

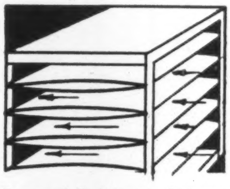
from CONNOR . . .

new in '58 – the helical spring damper

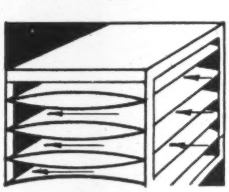
NOW in '59 PNEUMAFOIL®

PATENT PENDING

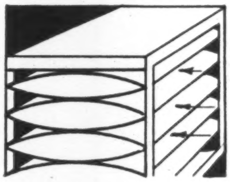




Pneumafoil has no linkage mechanism to actuate its vanes (1). Instead, each vane is occupied by a sealed neoprene actuator (2) connected to control air (3).



As air pressure is modulated between 0-15 psi, the actuator—literally lung-like in its pneumatic capacity—inflates, and expands the vanes; thereby producing throttling action by effectively diminishing the open area through which air can flow.



Achieving complete shutoff, all vanes make contact, allowing only negligible air leakage.

a pneumatically actuated high velocity air valve

PNEUMAFOIL is new in ways which are clearly beneficial to the design and function of a high velocity system, offering pronounced advantages of efficiency and economy over valves differently designed.

. . . new in DESIGN through which—for the first time—*pneumatic actuation* entirely eliminates the need for air motors and linkage mechanism in a rectangular high velocity air valve.

. . . new in CONSTRUCTION which employs streamlined air foil type aluminum vanes to minimize noise caused by air turbulence.

. . . new in CONTROL which is unprecedented in its operation directly by a standard pneumatic thermostat or constant volume regulator (both supplied by a 15 psi system).

. . . and extensive laboratory tests proved these Pneumafoil valves to have a minimum service life of twenty years!

DUAL DUCT SYSTEM ADAPTABILITY.

Available in 16 sizes, Pneumafoil also is the basic component in a new line of dual duct valve attenuators which range in air delivery from 1500 to 9600 cfm. Additionally, for fixed setting by manual adjustment, Connor offers MANUFOIL, which has a linkage mechanism and the same air flow characteristics of Pneumafoil.

For data on dimensions and capacities of this equipment, request Bulletin K-42.

Connor claims no corner on producing components of significantly advanced and beneficial design . . . but with Pneumafoil, Connor again demonstrates that its engineers constantly are developing equipment which assures the air conditioning industry and its customers of continued progress and growth.

SEE THE PNEUMAFOIL VALVE AT THE '59 ASHAE SHOW, BOOTH 631. JAN. 26-29.

CONNOR... for Constant Comfort Conditions

CONNOR ENGINEERING CORPORATION

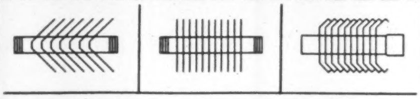
DANBURY • CONNECTICUT

CONNOR ENGINEERING CORPORATION **kno·draft®**
high velocity air diffusers

3
PROFILES
1
PRINCIPLE

THE PROFILES: ■ THE V-SHAPE; Slant/Fin's patented processes* make possible the use of stainless steel and other heavy metal fins with full weight and extra heavy pipe. ■ THE "SQ" SERIES; Even conventional square finned elements include a Slant/Fin extra. Unique tooth-and-bubble construction, assures positive alignment and stronger thermal bond. ■ THE MODIFIED-V; Fin-touch-fin construction permits use of light gauge fin material while maintaining maximum mechanical strength. And it's also the first element in heating history free of fin vibration noise! **THE PRINCIPLE:** Every Slant/Fin product is design-engineered to fully exploit the structural and physical properties of the materials used . . . to measure up to the most demanding specifications in the industry. **THE PARTICULARS:** Learn how you can specify a product of uncompromising quality at a price that's competitive with any in the industry. Fill in and mail this coupon . . . in return receive the 1958 Slant/Fin Catalog of Commercial and Residential Heating. It tells all.

*PATENT NO 2620171 AND OTHER PATENTS PENDING



Please see that I receive your 1958 Catalog
I am a
☐ Contractor ☐ Builder ☐ Architect
☐ Heating Engineer ☐ Wholesaler ☐ Other

Name____________________

Firm____________________

Address____________________

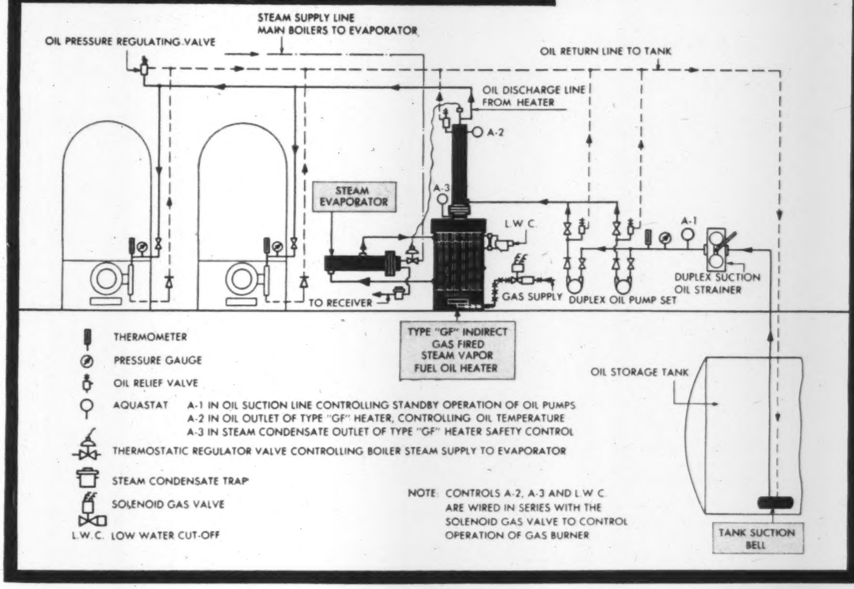
City____________State______

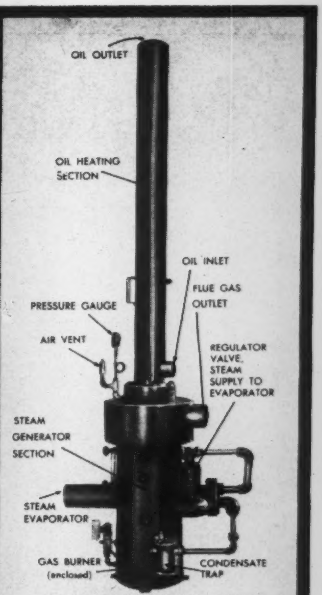
Slant/Fin

SLANT/FIN RADIATOR CORP.
87-49M 130th Street, Richmond Hill 18, N. Y.

SEE US AT BOOTH C-129 . . . 14TH INTERNATIONAL HEATING & AIR CONDITIONING EXPOSITION, CONVENTION HALL, PHILA., JANUARY 26-29

Idea no. 3 from Paracoil


STEAM SUPPLY LINE MAIN BOILERS TO EVAPORATOR
OIL PRESSURE REGULATING VALVE
OIL RETURN LINE TO TANK
OIL DISCHARGE LINE FROM HEATER
A-2
A-3
STEAM EVAPORATOR
L.W.C.
A-1
DUPLEX SUCTION OIL STRAINER
GAS SUPPLY
DUPLEX OIL PUMP SET
TO RECEIVER
TYPE "GF" INDIRECT GAS FIRED STEAM VAPOR FUEL OIL HEATER
OIL STORAGE TANK
TANK SUCTION BELL
THERMOMETER
PRESSURE GAUGE
OIL RELIEF VALVE
AQUASTAT A-1 IN OIL SUCTION LINE CONTROLLING STANDBY OPERATION OF OIL PUMPS
A-2 IN OIL OUTLET OF TYPE "GF" HEATER, CONTROLLING OIL TEMPERATURE
A-3 IN STEAM CONDENSATE OUTLET OF TYPE "GF" HEATER SAFETY CONTROL
THERMOSTATIC REGULATOR VALVE CONTROLLING BOILER STEAM SUPPLY TO EVAPORATOR
STEAM CONDENSATE TRAP
SOLENOID GAS VALVE
L.W.C. LOW WATER CUT-OFF
NOTE: CONTROLS A-2, A-3 AND L.W.C. ARE WIRED IN SERIES WITH THE SOLENOID GAS VALVE TO CONTROL OPERATION OF GAS BURNER


OIL OUTLET
OIL HEATING SECTION
OIL INLET
FLUE GAS OUTLET
PRESSURE GAUGE
AIR VENT
REGULATOR VALVE, STEAM SUPPLY TO EVAPORATOR
STEAM GENERATOR SECTION
STEAM EVAPORATOR
GAS BURNER (enclosed)
CONDENSATE TRAP

PARACOIL TYPE "GF" INDIRECT GAS FIRED FUEL OIL HEATER

Preheat No. 6 Oil with Safety, using BOILER STEAM and AUXILIARY GAS-GENERATED STEAM Installation and Operation are less costly!

- ***High operation costs of an all-electric No. 6 oil preheating system can be avoided by use of the Type "GF" Indirect Gas Fired Fuel Oil Heater!***
- ***No flame is in contact with oil tubes! Gas is used to generate a supply of steam to heat the oil.***
- ***Secondary evaporator eliminates use of gas entirely when main boiler is operating.***
- ***High viscosity oils are always maintained at atomizing temperatures.***

The Problem

Many No. 6 fuel oil burner systems operate on weekdays only, shutting down in whole or part over weekends and holidays. In such installations, special facilities are necessary to maintain adequate oil temperatures during the standby hours to enable the burners to start promptly and easily when the working period resumes.

In a typical standby system, oil is circulated by intermittent pumping between the burners and the storage tanks and is heated either by periodic boiler firing or by an all-electric system. Both are effective—but boiler heating necessitates firing a large boiler under most inefficient conditions, while an electrical system is extremely costly both to install and operate.

The Solution

Fast, effective, economical standby heating can be provided by a Paracoil system employing a **gas fired heater** (Type "GF"), a **tank suction bell** and a **secondary steam evaporator.**

The Gas-Fired Heater. The Paracoil "GF" Heater always maintains oil in its oil heater section at the proper burning temperature. This heated oil is always available for immediate circulation when needed to maintain pumping temperature in the oil circulation lines or when required to start the oil burners. In addition to maintaining oil at the proper burning temperature, the "GF" heater combined with secondary evaporator serves as a safety device which isolates the oil heater from contact with the primary steam generating system. Thus it is impossible to contaminate the main steam system or boilers with oil in event of an oil tube failure.

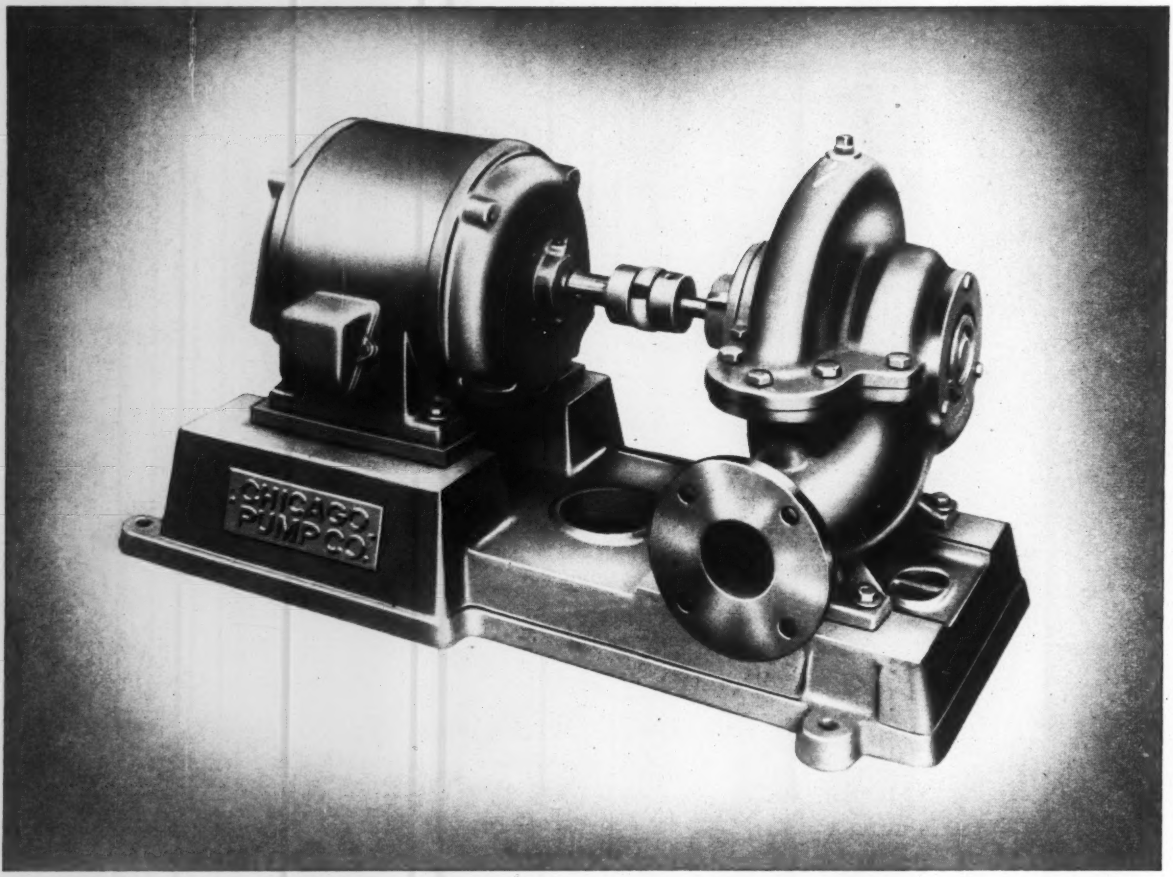
Tank Suction Bell. Heated oil is recirculated to a suction bell in the storage tank. Here it mixes with and heats oil to be withdrawn, maintaining a ready supply of fuel at pumping temperatures at all times.

Steam Evaporator. When the main boiler is in operation, boiler steam enters the steam evaporator and generates secondary steam which then takes over the fuel oil heating load. Concurrently, the Type "GF" heater cuts out, thus conserving gas when steam is available from the main boiler.

Paracoil engineers have designed and built many safety-type oil preheating systems. Their experience and know-how is at your service. Write for further information.

DAVIS ENGINEERING CORPORATION
30 Rockefeller Plaza, New York 20, New York • Circle 6-5650

cut along dotted line and save



"from Chicago"

- See our exhibit at the 14th International Heating & Air Conditioning Exposition Convention Hall, Philadelphia January 26-29, 1959

A NEW LINE OF HORIZONTALLY SPLIT-CASE CENTRIFUGAL PUMPS

Quiet Operating . . . Low Cost . . . Efficient, Hydraulically Balanced

FOR

AIR CONDITIONING
Air Washing
Chilled Water Circulating
Condenser Water Service
Cooling Tower Circulating

BOOSTER
Increasing City Water Pressure

HEATING
Boiler Feed
Condensation
Hot Water Circulating

PNEUMATIC WATER SYSTEMS
Automatically maintaining the required pressure in closed tanks to instantaneously deliver water to all fixtures.

REFRIGERATION
Water Circulating

SNOW MELTING
Ethelene Glycol Circulating

Chicago Pump Company announces a new line of Single Stage, Horizontally Split-Case Centrifugal Pumps—known as Type "S".

These pumps feature heavy shafts . . . short span between bearings . . . minimum space requirements . . . excellent operating efficiencies . . . desirable capacity-head characteristics . . . pre-lubricated ball bearings . . . mechanical seals . . . easily removable rotating assembly . . . suction and discharge on same lower casing centerline . . . rugged construction throughout to insure years of trouble-free service.

Bulletins and engineering data are available to Architects and Engineers from Chicago Pump Company or its Distributors located in most principal cities.

fmc
FOOD MACHINERY AND CHEMICAL CORPORATION

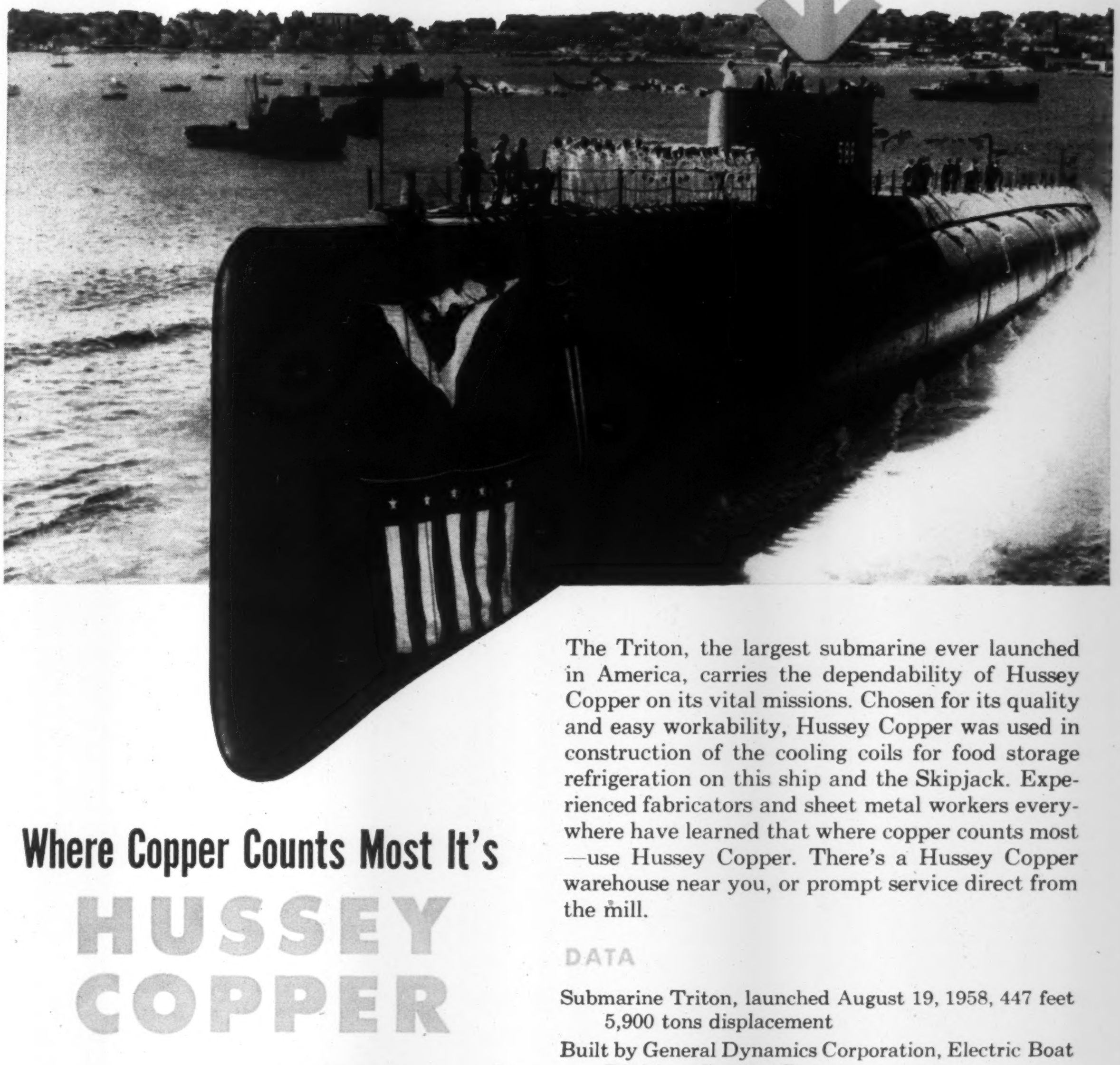
Putting Ideas to Work

FOOD MACHINERY AND CHEMICAL CORPORATION
Chicago Pump Company
622C DIVERSEY PARKWAY • CHICAGO 14, ILLINOIS

Copyright 1958—Chicago Pump Company

IT'S HUSSEY COPPER

IN AMERICA'S NEWEST ATOMIC POWERED SUBMARINES



The Triton, the largest submarine ever launched in America, carries the dependability of Hussey Copper on its vital missions. Chosen for its quality and easy workability, Hussey Copper was used in construction of the cooling coils for food storage refrigeration on this ship and the Skipjack. Experienced fabricators and sheet metal workers everywhere have learned that where copper counts most—use Hussey Copper. There's a Hussey Copper warehouse near you, or prompt service direct from the mill.

DATA

Submarine Triton, launched August 19, 1958, 447 feet 5,900 tons displacement

Built by General Dynamics Corporation, Electric Boat Division, Groton, Conn.

Refrigeration Cooling Coils "Krack" Refrigeration Appliances, Inc.

Where Copper Counts Most It's

HUSSEY COPPER

Since 1848
HUSSEY
COPPER · BRASS

C. G. HUSSEY & COMPANY
(Division of Copper Range Co.)
ROLLING MILLS AND GENERAL OFFICES
PITTSBURGH 19, PA.

SINCE 1905

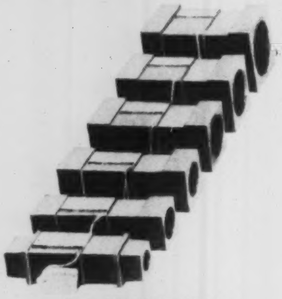
U.S.FLEX

*U.S. REG. T.M.

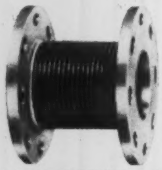
KEFLEX

*U.S. REG. T.M.

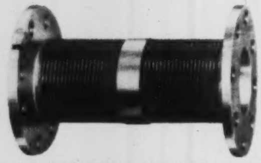
BELLOWS TYPE
EXPANSION JOINTS
and VIBRATION ABSORBERS



7 Q QUADRA-SIDE
EXPANSION COMPENSATORS

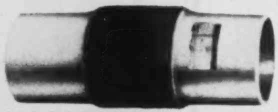


158-12E EXPANSION JOINT
SLOTTED BOLT HOLES

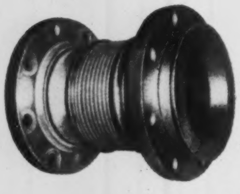


158-15-12E DUAL EXPANSION JOINT

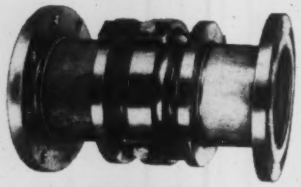
158-15-9E DUAL EXPANSION JOINT



151-2V VIBRATION ABSORBER



8-14S EXPANSION JOINT

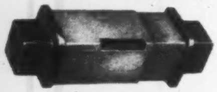


GIMBAL UNIT

U.S. FLEX-KEFLEX QUADRA-SIDE
Telescopic Expansion Compensators

Something New For The
OWNER—ARCHITECT—ENGINEER—CONTRACTOR

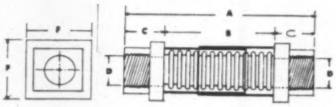
PAT. PEND.



SIZES:
3/4"—3.00" Inc.

TYPE 7Q
All Non Corrosive Stainless Steel Bellows
With Brass or Bronze End Fittings
and Telescopic Shrouds.
Details in Bulletin KQ-1
Standard Units—Pressure 300 psi Temp. 800 F.
Compression Force Less than 100 lb.

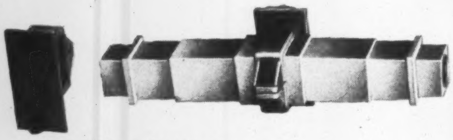
KEFLEX DATA



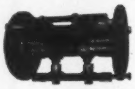
For: 1.50 in. Axial Travel

D Nom. IPS	A Overall Length	B Live Length	C Coup. Len.	F Max OD
3/4–1.00–1.25"	6.50"	4.00"	1.25"	2.00"
1.50	6.50	4.00	1.25	2.50
2.00	6.50	4.00	1.25	3.00
2.50	6.50	4.00	1.25	3.50
3.00	6.50	4.00	1.25	4.00

KEFLEX 7Q FINTUBE Assembly

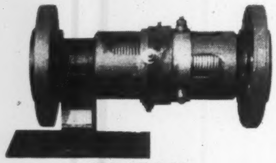


KEFLEX 7Q With Anchor Base

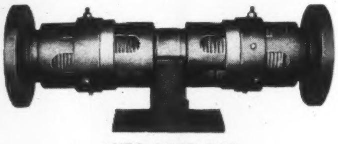


KEFLEX - SPRINGTROL

KEFLEX
With
KETROL GUIDES
PAT. PEND.

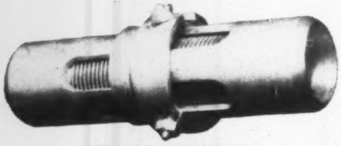


KTO-AB-14S

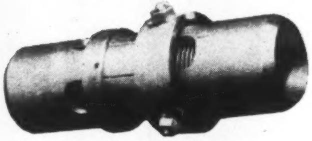


KTO-15AB-14S

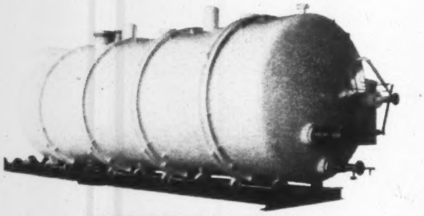
OUTSIDE
GUIDES
CAGE CONTROLLED



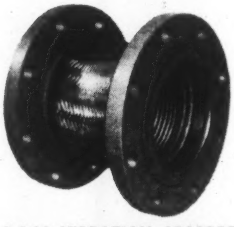
KTO-2E EXTENDED



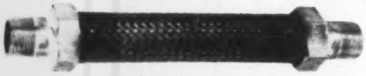
KTO-2E COMPRESSED



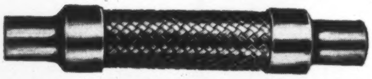
KEFLEX BELLOWS ON LOX
TANK For Vacuum Service



1-4-14S VIBRATION ABSORBER



FLEXIBLE "BMH" Connectors



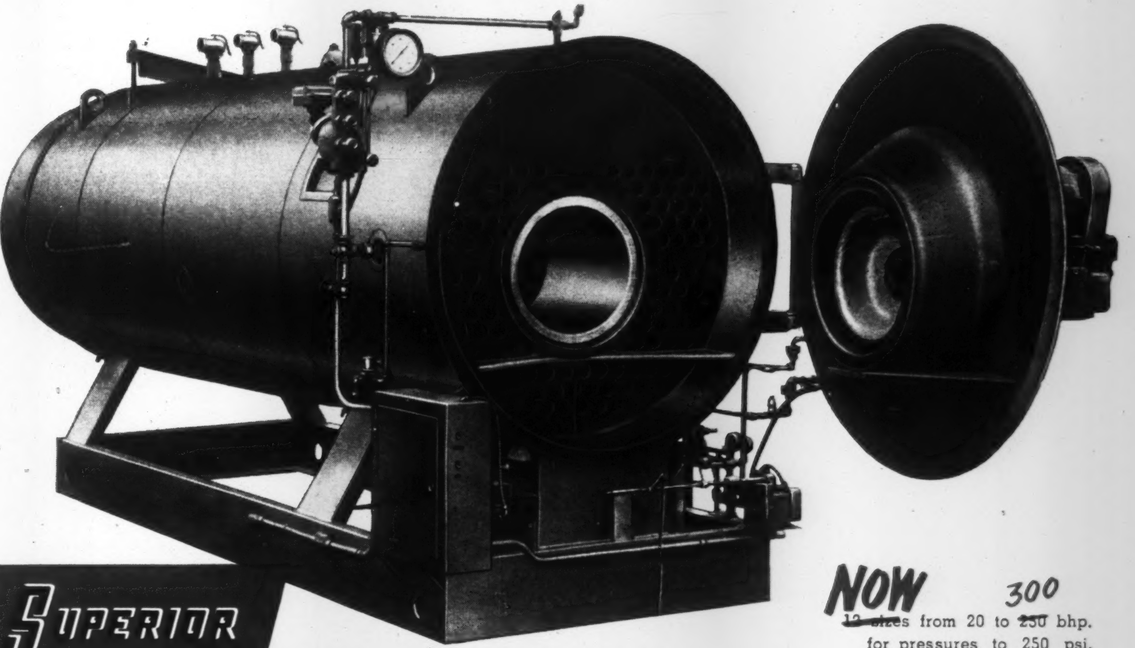
U.S. FLEX BRONZE VIBRATION ABSORBERS

WRITE FOR KEFLEX BULLETINS
A KEFLEX REPRESENTATIVE IS NEAR YOU

U. S. FLEXIBLE METALLIC TUBING CO.

Home Office 63 Main St. San Francisco 5, Calif.
Keflex Mfg. Div., 454 East Third St., Los Angeles 13, Calif.
Pacific Northwest, 2425-6th. Ave., So. Seattle, Wash.
328 N.W. Broadway, Portland 4, Ore.

NOW GREATER CAPACITIES in Smaller Space



SUPERIOR "COMPACT"

NOW ~~12 sizes~~ from 20 to ~~250~~ 300 bhp.
for pressures to 250 psi.
or for hot water.
Fully automatic operation
firing oil or gas or both.
Before you buy or specify
any packaged boiler,
get the details in Bulletin 1004C

all the big boiler features you want combined with accessibility and easy maintenance

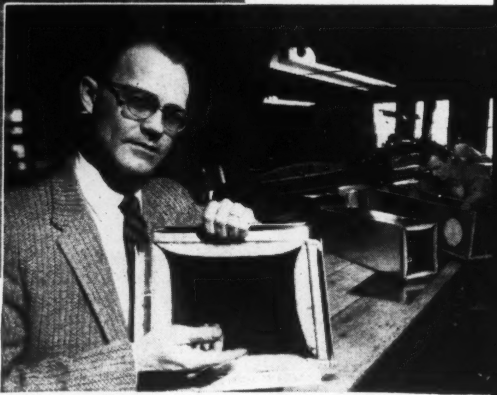
With a full 5 sq. ft. of heating surface per bhp., 4-pass, down-draft design, and built-in induced draft, the Superior COMPACT is a highly efficient and dependable package. Its efficiency, guaranteed by factory-fire-test of every unit, insures years of economical performance; for the Superior COMPACT is planned for the easy maintenance which sustains high efficiency.

Front doors are hinged, and rear doors hinged or davited to simplify inspection and cleaning. But note that no belts or mechanical components are located inside the front door where they would be subject to the heat of the fire. All units firing #4, #5 and #6 oil are equipped with dependable Superior Rotary Burners. High in the shell, and protected by the tubes of the fourth pass, the furnace is away from the "danger zone" eliminating the possibility of bagging or blistering.

Specialists in PACKAGED BOILERS... exclusively

SUPERIOR
PACKAGED BOILERS

SUPERIOR COMBUSTION INDUSTRIES INC.
TIMES TOWER, TIMES SQUARE, NEW YORK 36, N.Y.



Pittsburgh Superfine is quickly cut to correct size with a knife. Cut sections are then bonded to duct with adhesive. Extra adhesive is applied to edges of insulation to adhere them to edges of metal.

"We used one-inch, 1½-lb. density Pittsburgh Superfine Fiber Glass Insulation with a Neoprene coating to line all ducts," says Mr. George P. Fenton. "Superfine is flexible, adaptable and easy to handle."

At Greater Pittsburgh Airport's New Extension—Pittsburgh Superfine Insulates Air Conditioning Duct Work

"When our company installed the sheet metal ducts for the two air conditioning systems at Greater Pittsburgh Airport's new East Dock, we used over 7,000 sq. ft. of Pittsburgh Superfine Fiber Glass Insulation as the acoustical and thermal lining for the ducts," reports Mr. George P. Fenton, General Manager, McIlroy Sheet Metal Engineers and Fabricators, Pittsburgh, Pennsylvania.

Why Pittsburgh Superfine was specified

"This job called for an insulation that could withstand air velocities, would have proven erosion resistance, would provide good acoustical properties at minimum cost, and would insure resistance against temperature differential. Pittsburgh Superfine met all these requirements easily."

Easy to work with on the job

"We've used Pittsburgh Superfine often, and know from experience that it's flexible, adaptable, easy to handle and easy to cut. It's especially adaptable for use in irregularly curved ducts. There was not a single installation problem on the airport job that we could not handle with Superfine," concluded Mr. Fenton.

Pittsburgh Superfine Fiber Glass can help you, too!

It's rot proof, fire-resistant . . . and it's the finest insulation against heat, cold or noise you can get! Available in a variety of facings to meet your needs. For complete information, write to *Pittsburgh Plate Glass Company, Fiber Glass Division, One Gateway Center, Pittsburgh 22, Pa.*

PITTSBURGH SUPERFINE IS A PRODUCT OF THE FIBER GLASS DIVISION OF PITTSBURGH PLATE GLASS COMPANY

Sales offices are located in the following cities: Charlotte, Chicago, Cincinnati, Cleveland, Detroit, Houston, Los Angeles, Minneapolis, New York, Philadelphia, Pittsburgh and St. Louis

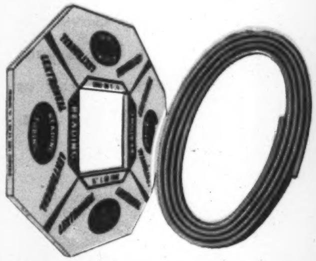
FIBER GLASS

PITTSBURGH PLATE GLASS COMPANY

"IN TUBING, Nothing Beats Copper—
In COPPER, Nothing Beats READING!"

For—
COPPER WATER TUBE

Specify
READING
"LEKTRONEAL"®



For—COPPER
REFRIGERATION TUBE

Specify
READING
"LEKTROSEAL"®

Soft tempered
easy forming—
dehydrated
Crimped
ends seal
out moisture
& dirt

50 ft. coil in protective carton.

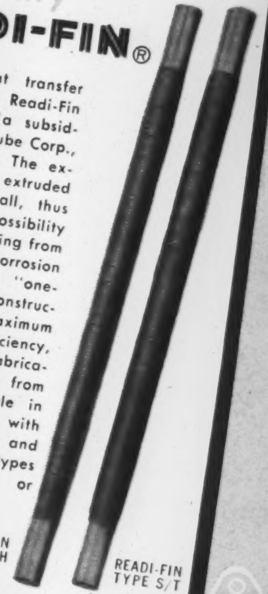
Also Specify
READING
for

... COMMERCIAL COPPER TUBE
... RED BRASS & COPPER PIPE
... THREADLESS COPPER PIPE

For—
FINNED COPPER TUBE

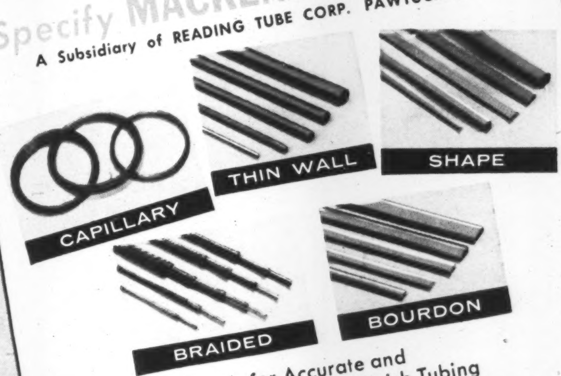
Specify
READI-FIN®

A line of heat transfer tubing made by Readi-Fin Mfg. Co., Inc. (a subsidiary of Reading Tube Corp., at Reading, Pa.). The extended surface is extruded from the tube wall, thus eliminating the possibility of fin failures resulting from thermal shock, corrosion and erosion. This "one-piece" (integral) construction provides maximum heat transfer efficiency, ruggedness, easy fabrication and freedom from fouling. It's available in Water Tube types with finned or plain ends and in Condenser Tube types with finned, plain or stripped ends.



For—PRECISION COPPER TUBE

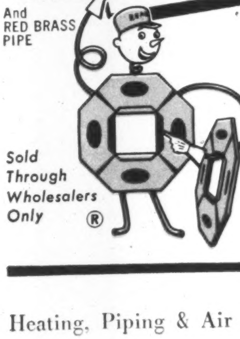
Specify **MACKENZIE WALTON**
A Subsidiary of READING TUBE CORP. PAWTUCKET, R. I.



- Famous for Accurate and Fine Finish Tubing
- Quality Controlled from Start to Finish

READING
COPPER BRASS
TUBE

And RED BRASS PIPE



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MADE IN U.S.A. TO THE STANDARDS OF AMERICAN INDUSTRY

READING TUBE CORPORATION

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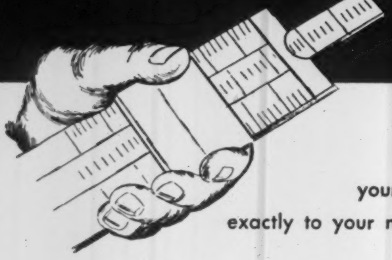
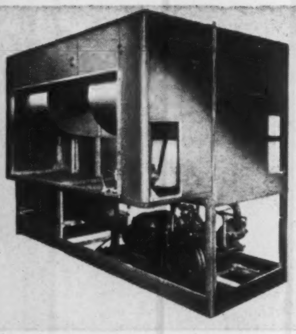
Unusual air-conditioning needs? . . .

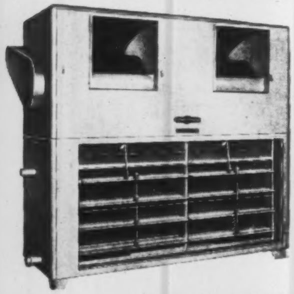
YOU CAN "DESIGN" YOUR OWN ©*Satisfabricated* PACKAGE . . . AT GOVERNAIR!



Yes, working with numerous basic models, Governair will incorporate your specifications and modifications to SATISFABRICATE the package exactly to your needs. You can be sure of its quality, too . . . for every Governair unit is constructed by expert craftsmen. This is your assurance of dependable performance and exact fit. Why not consult us on your next air conditioning project . . . from 3 to 100 ton units.



SELF-CONTAINED MULTI-ZONE AIR CONDITIONERS—with evaporative condenser. Zoned conditioner section — hot and cold deck, with mixing dampers for each zone. Sizes 7½ to 80 ton — single or dual refrigeration circuit. Ready for simple connection to duct system.



FAN AND COIL CABINETS — cooling, heating, humidifying, dehumidifying, ventilating, 1 to 100 ton, 500 to 30,000 cfm, vertical or horizontal types. Governair multi-zone fan and coil units are available in sizes ranging from 5 to 80 ton capacities, suitable for individual zoning.

Also: Blast Coils, Cooling Towers, Packaged Water Chillers, Low Temperature Coolers.

FOR FULL DETAILS WRITE

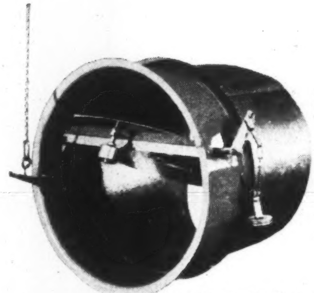
GOVERNAIR

THE GOVERNAIR CORPORATION

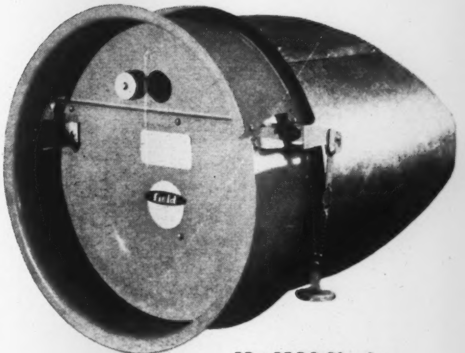
Originators of Completely Packaged Air Conditioners

4840 NORTH SEWELL • OKLAHOMA CITY, OKLAHOMA

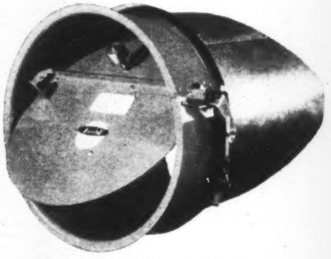
The Triple-Fuel M+MG2 Joins the Field Family of Draft Controls



M+MG2 Barochek for Solid Fuels



M+MG2 Single-Acting for Oil



M+MG2 Double-Acting for Gas or Oil-Gas

A new triple fuel control, the M+MG2 is available in 10″ through 32″ sizes for oil, oil-gas, gas, and solid fuel furnaces and boilers, employing either natural, induced or forced draft. A very heavy duty, highly sensitive control, it can maintain draft settings as low as .002″ and as high as .3″. Write for application engineering data.

field

FIELD CONTROL DIVISION of H. D. Conkey & Company, Mendota, Ill.

AFFILIATES { Conco Building Products, Inc. • Brick, Tile, Stone
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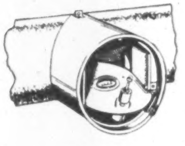
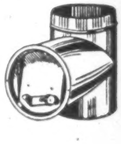
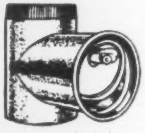


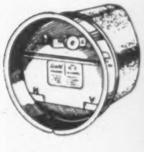
Field M
6″ thru 9″



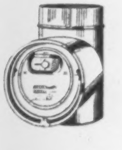
Field R
6″ and 6-7″



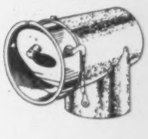
Field 6″
Incinerator
Control



Field RC
6″ thru 9″



Field Scotty
6″ and 6-7″



Field MG1
7″ and 8″

NOW . . . Split-Second Handling

With the New Type 75
HENRY CARTRIDGE
ANGLE FILTER-DRIERS

PATENT PENDING

FLOW

An efficient and high capacity multiple cartridge filter-drier with a drying and flow capacity range up to 100 tons.

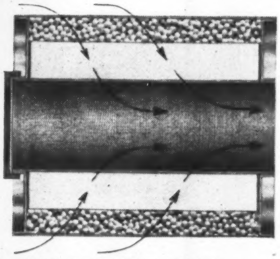
Low Pressure Drop...No By-Pass Required

Type 875-CMS Cartidges for these new filter-driers are completely self contained, self sealing and self positioning. Only a few seconds time is required to insert cartridges, resulting in a minimum loss of cartridge efficiency as the desiccant cannot pick up any appreciable amount of moisture from the air because of installation speed.

A parallel flow pattern through the individual cartridges results in maximum efficiency and low pressure drop.

Available in 1⅛" to 2⅛" O.D. Solder connection sizes.

Write for Henry Bulletin 75-FD describing these units.



TYPE 875-CMS FILTER-DRIER CARTRIDGE WITH

1. OUTER PERFORATED BRASS SHELL.
2. BED OF GRANULAR MOLECULAR SIEVES.
3. CERAMIC FIRED DESICCANT FILTER-CORE.
4. INNER DUTCH WEAVE MONEL SHELL.

HENRY VALVE CO.

MELROSE PARK, ILLINOIS (Chicago Suburb)
Cable: Hevalco, Melrose Park, Illinois

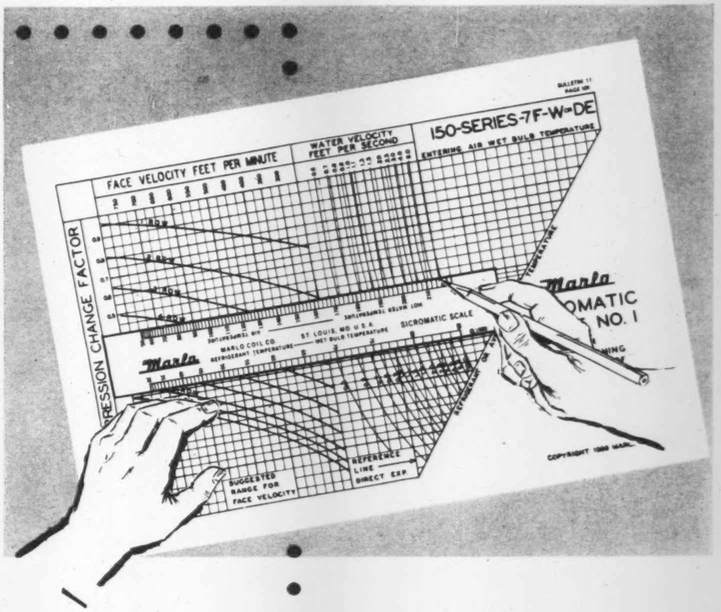
VALVES, DRIERS, STRAINERS AND ACCESSORIES FOR
REFRIGERATION, AIR CONDITIONING AND INDUSTRIAL APPLICATIONS

HENRY VALVE CO.
CONTROLLING FLOW
SINCE 1914

SEE OUR EXHIBIT BOOTH 313
Fourteenth International Heating & Air-Conditioning Exposition, Philadelphia, Jan. 26-29, 1959

Now... Save *Time*... Save *Money*

ON COIL SELECTION


150-SERIES-7F-W=DE
FACE VELOCITY FEET PER MINUTE
WATER VELOCITY FEET PER SECOND
ENTERING AIR WET BULB TEMPERATURE
...RESSION CHANGE FACTOR
SICROMATIC SCALE
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...OMATIC
... NO. I
SUGGESTED RANGE FOR FACE VELOCITY
REFERENCE LINE — DIRECT EXP.
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with **Marlo** sicromatic charts and rule...

for the Architect and Engineer

- No More Trial-and-Error Calculations
- No Interpolations

A QUICK, ACCURATE WAY TO DETERMINE NUMBER OF TUBE ROWS • REFRIGERANT TEMPERATURE • LEAVING AIR TEMPERATURE

When selecting coils, there's no need to waste time on long mathematical equations and trial-and-error calculations with pages and pages of tables. These handy charts and rule from Marlo permit direct graphical coil selection *in a matter of seconds,* with the simple location of two straight lines. On one chart, you can read all necessary data for a particular application, including proper refrigerant or chilled water temperatures.

FREE Revised Bulletin on MARLO COOLING COILS

Complete with information on design, construction, dimensions, performance characteristics, etc.

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Quality Air Conditioning and Heat Transfer Equipment since 1925

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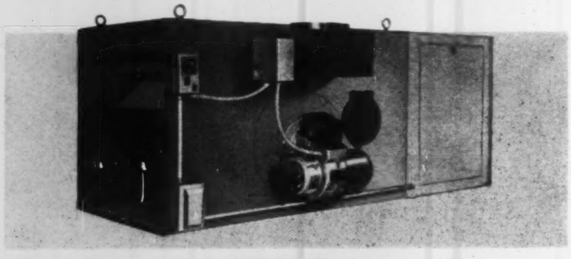
MAMMOTH AND COMMERCIAL-AIRE

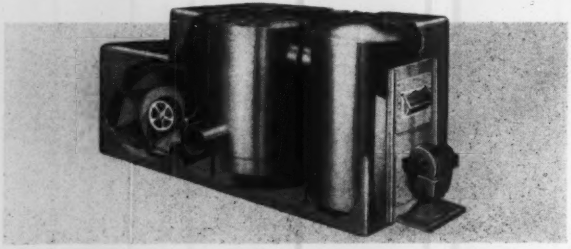
FURNACES/ HEATERS/



COMPACTO HORIZONTAL

Suspended Heaters 7 Sizes/185,000 to 450,000 B.T.U.'s

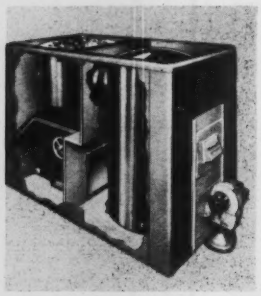
Require no floor space. Easily suspended from rafters or installed in loft or attic. A complete wired package ready for fuel line hook-up or with burner and controls unwired and unassembled. Stainless steel combustion chamber for trouble-free performance. Oil or gas fired. Write for Bulletin 57S-1.



ADAPTO FURNACES

7 Designs from 8 Sizes/315,000 to 2,379,000 B.T.U.'s

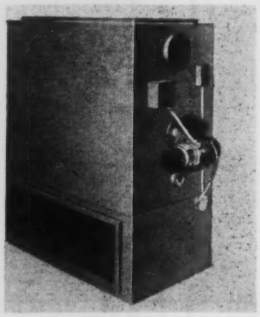
Vertical tubular design, welded heavy duty boiler plate steel construction. Features long flue travel, heat saver, extra head space. Radiant straight line heat increases efficiency. Baked enamel casings. Oil, gas or coal fired. Write for Bulletin 57M-1.



COMPACTO FURNACES

5 Sizes / 175,000 to 413,000 B.T.U.'s

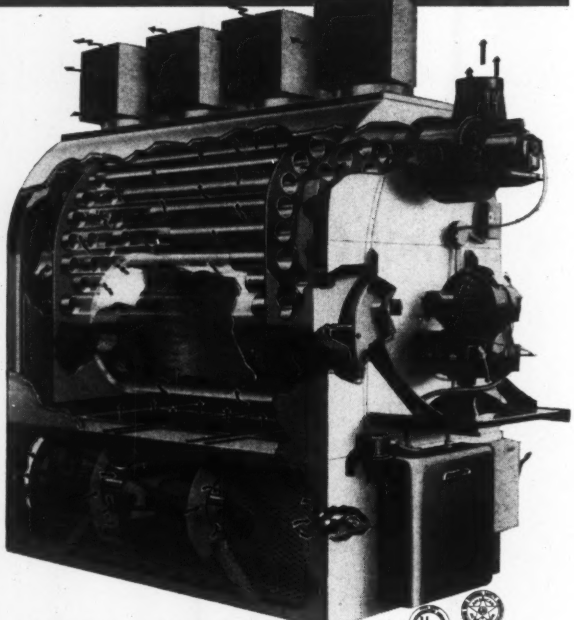
Compact, efficient and economical. Vertical tubular design. Welded heavy duty boiler plate steel construction. Compact casing encloses primary chamber, heat saver, blower, motor and filters. Oil, gas, or coal. Write for Bulletin 57M-1.



COMPACTO FLOOR SET OR INVERTED HEATER

7 Models/185,000 to 450,000 B.T.U.'s

Complete packaged unit can be floor set upright or inverted. Rugged and compact. Interchangeable, flange mounted, oil or gas power burners. Attractive baked enamel finish.



DIRECT-FIRED

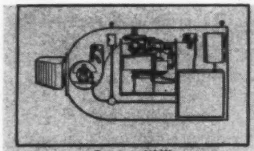
Space Heaters

300,000 B.T.U.'s TO 2,000,000 B.T.U.'s

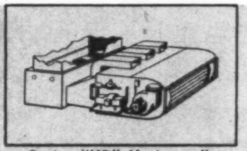
Primary cylindrical stainless steel combustion chamber, secondary heat-extracting tubes, and consistent rate of combustion gas flow provide high efficiency, utilizing 80% of available heat of fuel. Low cost, easy maintenance, complete accessibility. Completely equipped and wired with controls for economical installation. Write for Bulletin C-357.

MAMMOTH FURNACE COMPANY

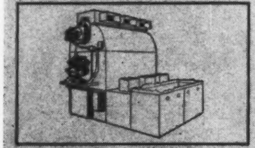
6425 Cambridge Street • Minneapolis 26, Minnesota



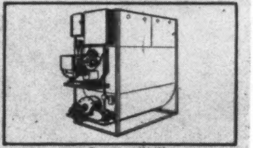
Series "H"
Horizontally suspended.



Series "HD" Horizontally
for duct distribution.



Series "FD"
Upright for duct distribution.



Series "U"
Inverted suspended.

SEE US IN BOOTH 57 / INTERNATIONAL HEATING AND AIR-CONDITIONING EXPOSITION
Convention Hall, Philadelphia
January 26-29, 1959

Here Precision Counts...

A fine racing car must be *precision-designed* and *precision-built* . . . as must the motors for your appliance or equipment applications. At Emerson-Electric, you get the benefits of more than 65 years of experience in solving motor-drive problems . . . plus unique production facilities that produce *in volume* the precision motor specifically designed for *you*.

Remember . . .

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- Emerson-Electric produces *custom-engineered* motors to suit *your specific needs*.

To solve your motor-drive problems with precision, call, wire or write Dept. M-351 today. The Emerson Electric Mfg. Co., St. Louis 21, Mo.

EMERSON-ELECTRIC *of St.Louis · Since 1890*

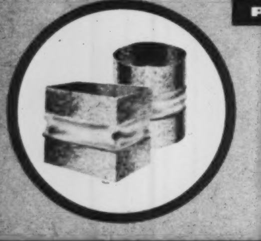
ALL SHIPPED IN
DISPENSER-TYPE CARTONS

CAINS

COILS OF PROFIT

Quick, Economical, Easy, and Practical Methods for---

FABRICATING FLEXIBLE DUCT CONNECTIONS
VANES FOR ELBOWS • AIR SCOOPS AND LOUVERS



PRE-FAB-RIC

A PREFABRICATED FLEXIBLE DUCT CONNECTION

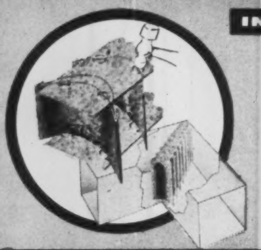
Using a fabric (of your choice) in the center with a galvanized metal strip on each side. *Double-Safe Locked* together in a single continuous piece, coiled in a dispenser-type carton ready for use.

A TYPE, SIZE, AND PRICE FOR ALL JOBS

THREE GRADES	THREE FABRICS
Commercial - Economy Residential	Canvas - Asbestos Neoprene

FAB-RIC

TOP QUALITY FABRICS (Without Metal)
Same Weight and Width (5") Used in PRE-FAB-RIC. Put Up in 100' Rolls



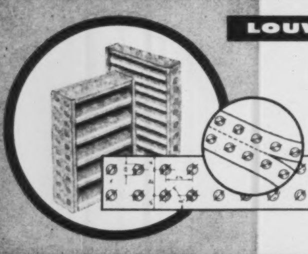
INSTANT-VANE RAIL

ELIMINATES

Layout, Tab Cutting, Hole Punching, Spot Welding, Riveting, Etc., Results in a Savings Up to 70% over old methods.

Best method ever devised for installing turning vanes (single or double) in sq. elbows.

100 FT. COILS **ENGINEER APPROVED**



LOUVERAIL

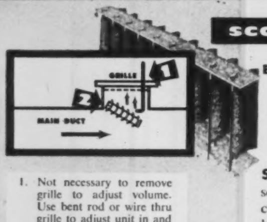
ELIMINATES

Layout, Tab Cutting, Hole Punching, Riveting, Spot Welding, Etc.

AN ECONOMICAL AND PRACTICAL METHOD FOR FABRICATING LOUVERS — REMOVABLE, HINGED, OR STATIONARY. LOUVERAIL is 24 ga. galvanized 4½" wide in (2—50' lengths) 1 right and 1 left coiled together.

Split (½) Rail for Louver Thicknesses From 1¼" to 1¾".
Use Full Size Rail for Louver Thicknesses From 3¼" to 4".

SCOOP-RAIL

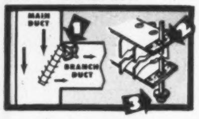


1. Not necessary to remove grille to adjust volume. Use bent rod or wire thru grille to adjust unit in and out of main duct.
2. S. M. screws at top and bottom.

ELIMINATES—
- **Radius ell, transition, and splitter damper at branch duct take-offs.**
- **Volume damper on grille.**
- **Job delay in ordering.**

SCOOP-RAIL for fabricating air scoops for branch ducts and grille collars. Insuring uniform air distribution. Complete control of air volume in branch duct or at grille face. Simplifies balancing of the system.

USED AT BRANCH DUCT



1. ⅜" standard quadrant where accessible.
2. Speed nut tabs for ⅜" square rod are riveted, spotwelded or s. m. screwed to ends of SCOOP-RAIL.
3. Where desired clg. control may be used.

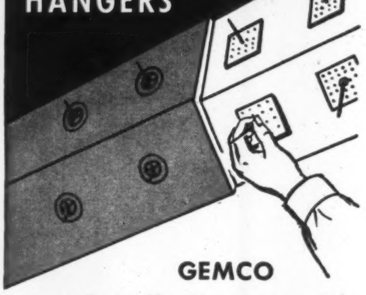
SOLD ONLY THROUGH JOBBERS AND DISTRIBUTORS **Union Made**
Some Territories Open for Manufacturers Agents Calling on Jobbers and Distributors

CAIN MANUFACTURING CO.
1111 North 5th Avenue **Phone FA 2-0354** **Birmingham, Alabama**

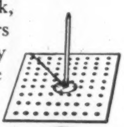
SAVE TIME— SAVE MONEY

with these dependable

INSULATION HANGERS

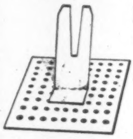


GEMCO
Spindle Hangers and W-A Self-Locking Washers



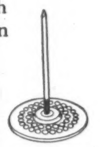
Ideal for insulation work, Gemco Spindle Hangers are easily and quickly installed . . . with positive adhesion to concrete, brick or metal. W-A Self-Locking Washers pressed over spindles with minimum effort and lock insulation securely in place.

GEMCO Pronged Hangers



Designed especially for supporting various types of block insulation. Easily applied for positive adhesion. Prongs (available in various lengths from 1³⁄₁₆" to 6⅞") bend over to hold insulation firmly in place.

TUFF-WELD Nylon Hangers



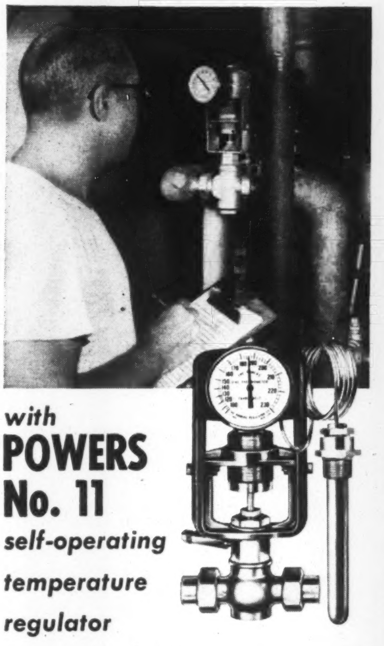
Two-piece hangers . . . with bases of tough, mold nylon and spindles of metal. Made especially for smooth surfaces. Spindles snapped into bases as needed; reduces inventory, storage space, freight costs. W-A Self-locking washers hold insulation securely in place.

TUFF-BOND Quik-Set Adhesive (for smooth or slightly irregular surfaces) and General Purpose Adhesive (for rougher surfaces) assure permanent adhesion of hangers when used as directed. Write or wire for details and specifications.

GOODLOE E. MOORE
INCORPORATED
DANVILLE 28, ILLINOIS

VISIBLE PROOF

of constant temperature control



with

POWERS No. 11

self-operating temperature regulator

This big four-inch dial gives a quick, visual means of checking controlled temperatures . . . an accurate guide for regulator adjustment.

Designed for precise temperature control, the Powers No. 11 Regulator is self-powered . . . simple, compact and dependable. Full throttling action is gained without the aid of *any* external power source. Special valve stem lubricator eliminates binding. Big double ply metal bellows provide extra valve power — longer life. Union body assures easy installation.

For specifications, valve sizes, types and temperature ranges, call your Powers branch office—engineering services in 66 cities. Write for Bulletins Nos. 329 and 330.

THE POWERS REGULATOR CO.,
Dept. 159, Skokie 6, Ill.

POWERS
TEMPERATURE CONTROL

PLASTIC PIPE AD WITH NO PICTURE?

Why no picture: Because almost all plastic pipe looks the same. You know yourself that looks can be mighty deceiving, and piping that goes wrong can be mighty expensive. A picture means nothing . . . but . . .

There are scores of brands of plastic pipe on the market . . . made of a dozen different kinds of materials. Most of it is labeled "corrosion-resistant" but the results may be good, bad or indifferent depending on your choice. A picture is no help. Here's what to look for instead:

The universal material? No such thing. No one plastic can handle all liquids and gases . . . no one has *all* the physical properties required of a truly universal pipe. Closest to it are Ace Riviclor (Rigid PVC) and Ace-Ite (rubber-plastic blend). The former is a little better on chemical resistance, the latter is a little better on impact strength and heat resistance. Both same price.

Are plastics strong enough? Thousands of chemical plants say "yes". Pipe is now available in several wall thicknesses . . . in flexible tube sizes (Ace-Flex clear transparent), up through gas-tubing sizes (Ace-Ite and Ace Riviclor), through flexible Supplex polyethylene pipe, and Schedules 40 and 80 rigid plastic pipe for pressures up to 490 psi.

Above that, there's Ace rubber-lined steel pipe. And don't forget Ace soft-rubber-lined pipe for resistance to abrasion.

Where do I use it? For corrosive chemicals and gases of all types. The only ones that are difficult are certain solvents and chlorinated aromatic hydrocarbons, and if you're careful to pick the right *one* of the *many* Ace materials, you can even handle most of these tough corrosives. Use plastics, too, for water lines, gas lines, electrical conduit, etc., or any lines where the pipe passes through corrosive vapors or damp areas, or goes underground.

Is there a plastic for hot corrosives? Yes, Ace Tempron, which is good to 275 deg. F. with most chemicals. Stays chemical resistant, strong, and rigid where other plastics may be attacked or may sag.

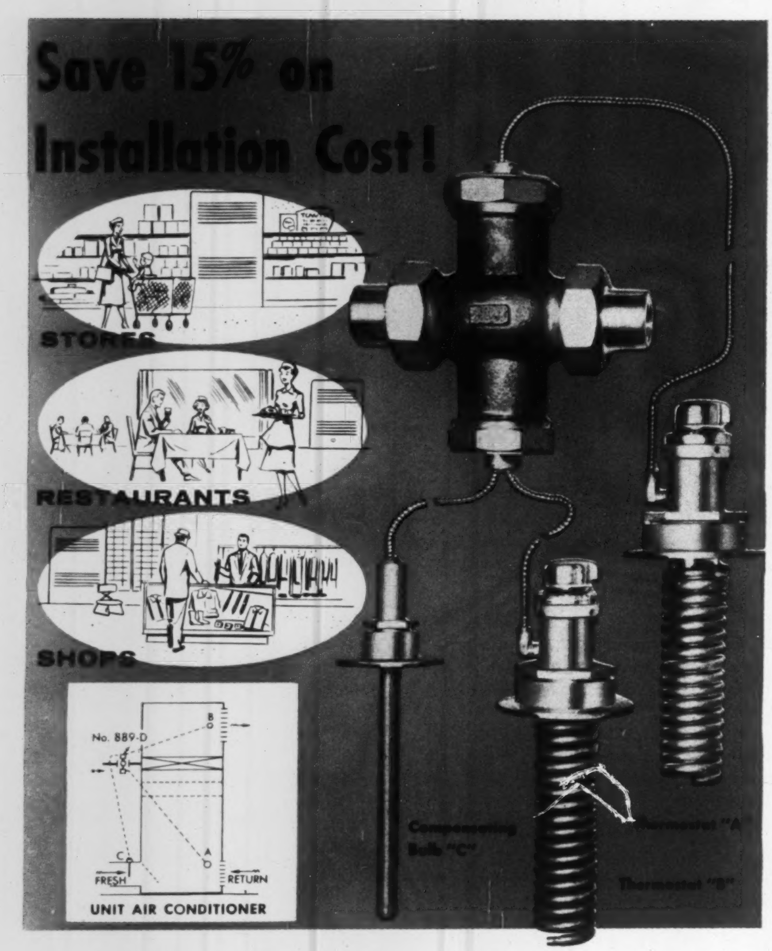
How can I dodge "trial and error"? Go to a company that has no axe to grind. We, for instance, make no less than nine different kinds of pipe . . . with fittings and valves to match . . . and give you thoroughly unbiased advice backed by 100 years of experience and prices as low as you'll find anywhere.

FREE SELECTOR CHARTS

20 valuable pages . . . comparable properties, chemical resistance, costs, etc. of 11 plastics and rubber materials Write today for Bulletin CE-50.

AMERICAN HARD RUBBER COMPANY
Division of Amerace Corporation
ACE ROAD · BUTLER, NEW JERSEY

ACE



Now . . . modulating control of steam heating in commercial air conditioning systems!

Save time, save money, get peak efficiency with this dual-function 889 Sylphon® Regulator that costs less to install, needs no electrical connections . . . requires no maintenance.

Twin self-operated controls and trouble-free "weather compensator" make this Regulator ideal as heating control on packaged air conditioners for small shops or other commercial buildings; equally suited to central systems.

Available with adjustable bulbs or wall thermostats; control knobs concealed in cabinet for trim appearance.

Write for Catalog E-AH

Mr. Controls

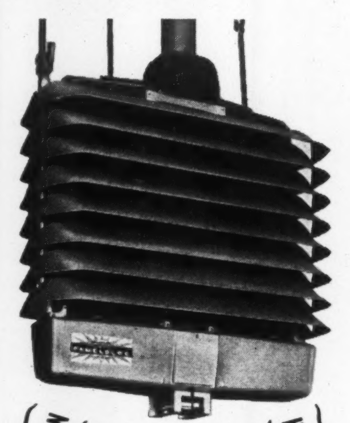
Robertshaw-Fulton

CONTROLS COMPANY

FULTON SYLPHON DIVISION • Knoxville 1, Tenn.

SEE THIS HEATER IN OPERATION

VISIT BOOTH C-158
CONVENTION HALL
PHILADELPHIA
Jan. 26 thru 29.



HEATS LIKE THE SUN
HEATS LIKE THE SUN
HEATS LIKE THE SUN
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HEATS LIKE THE SUN
HEATS LIKE THE SUN

PANELBLOC GAS-FIRED HEATERS ARE SAFE AND DEPENDABLE

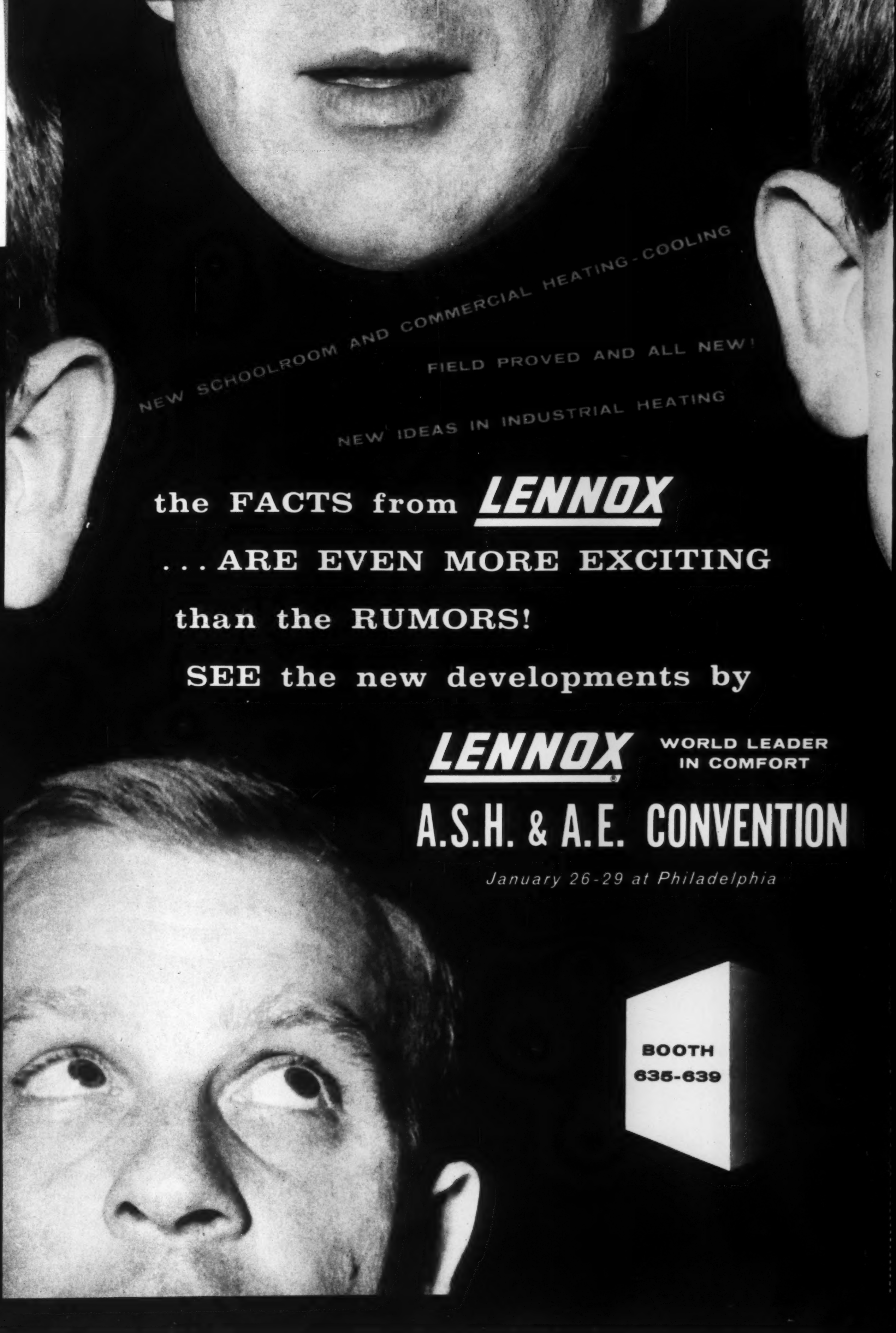
THEY'RE FAST BECOMING AMERICA'S MOST POPULAR GAS HEATER

If you don't know the full story on PANELBLOC, you should write for information today.

Panelbloc heaters are manufactured for stock, and are shipped upon receipt of order. Installation and start up is fast—no electrical connections or expensive wiring needed. There are no fans or blowers—no moving parts. That means no noise, and minimum maintenance.

Panelbloc can heat an entire area, or any portion of that area — and no partitions are needed. Panelbloc actually "Heats Like The Sun".

Thermobloc Division
PRAT-DANIEL CORPORATION
8-1 Meadow St. So. Norwalk, Conn.



NEW SCHOOLROOM AND COMMERCIAL HEATING-COOLING

FIELD PROVED AND ALL NEW!

NEW IDEAS IN INDUSTRIAL HEATING

the FACTS from **LENNOX**

...ARE EVEN MORE EXCITING

than the RUMORS!

SEE the new developments by

LENNOX WORLD LEADER IN COMFORT

A.S.H. & A.E. CONVENTION

January 26-29 at Philadelphia

BOOTH 635-639

ALL NEW

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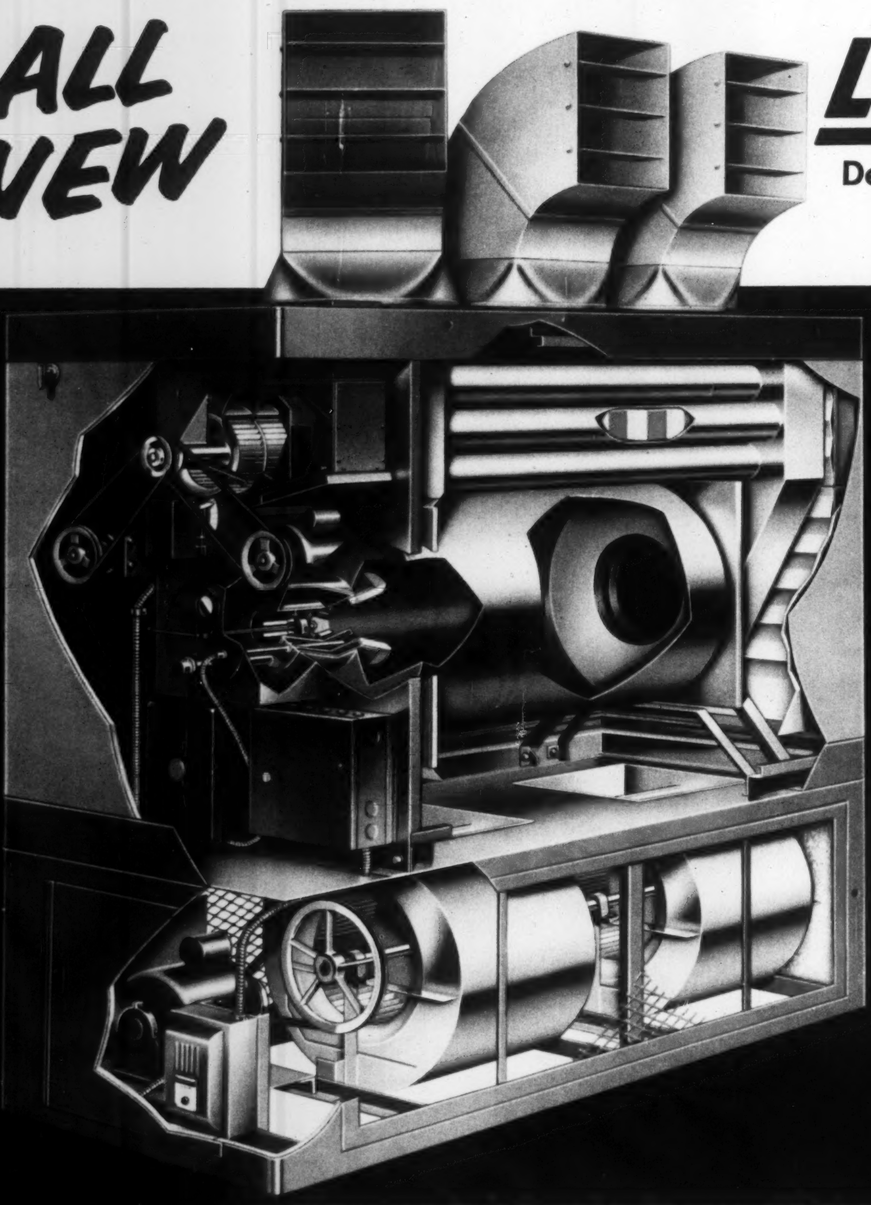

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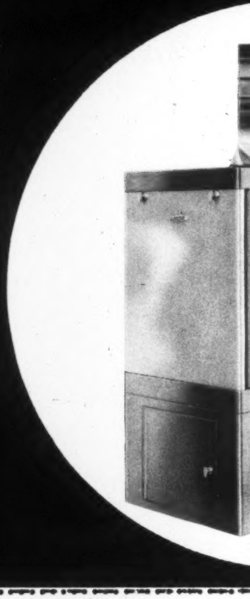
oil, or combina

• HEAT EXCHA
writers require
180° F. rise ov
and aluminized
internal baffles.



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LENNOX INDUSTRIES INC.
P. O. Box 1294
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OX "OG" SERIES INDUSTRIAL HEATER

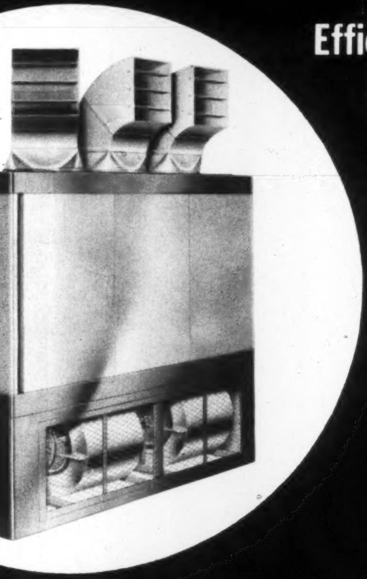
Out"...to meet the stiffest demands of commercial and industrial applications:

TIVE ORIGINAL COST plus LOWEST OPERATING COST PER YEAR!

ED BURNER DESIGN . . . De-
ically for the "OG"—for gas,
nation fuels.

HANGER . . . Meets under-
irements when subjected to
over stainless steel primary
zed secondary surfaces. No
es. Exclusive expansion joint.

- **SINGLE MOTOR OPERATION** . . . One motor operates fuel unit when required, also induced draft blower and combustion air blower.
- **QUIET RUNNING BLOWERS** . . . Moves huge volumes of air at office-quiet sound levels. Blower motor mounted on adjustable slide rails.
- **COMBUSTION AND INDUCED DRAFT BLOWERS** . . . Blowers mounted on common shaft . . . driven by single motor. All combustion air is pre-heated.
- **MASTER PROGRAMMER CONTROLS**... Enclosed to prevent tampering or damage. Fireye standard on all units. Stack control optional on oil units.



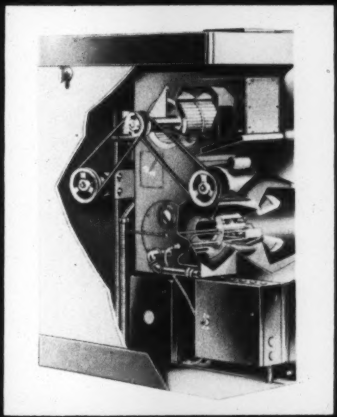
Efficient heat transfer design results in minimum physical size... may also be installed horizontally or suspended from ceiling

Where floor space is at a premium, a suspended horizontal or inverted unit is often the answer. Used with optional service platform, this unit is serviced easily, and takes up very little ceiling area. For ventilating, as well as heating, automatic fresh air dampers can be attached along with filter sections. With the addition of ducts, it is ideally suited for central heating applications at static pressures up to 2 inches.

Because of the simplicity of installation, costs are kept at a minimum. Compact design and trouble-free operation continue to bring you low cost heating and maintenance which is typical of *all* Lennox industrial installations.

Available with or without Air Conditioning

OIL...
GAS...
OR DUAL-FUEL
BURNER
WITH INSTANT
CHANGEOVER!



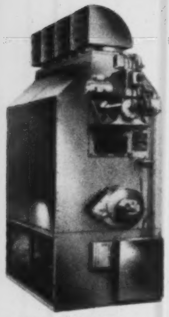
OIL BURNER . . . Mechanical atomizing gun type for use with C.S.G. No. 2 oil and lighter. Consists of belt driven combustion air and induced draft fan, motor, two-stage fuel unit, nozzle assembly, ignition transformer, solenoid valve and combustion air damper. Fireye control monitors flame at all times.

GAS BURNER . . . Most component parts of the gas and oil burner are the same. Basic gas burner design is extremely simple and practical. Gas is introduced at right angles to combustion air nozzle creating a highly turbulent and efficient mixing of air and gas—plus more rapid combustion.

DUAL-FUEL BURNERS . . . Gas and oil burners are available and interchangeable with single fuel burner. All burners are of the same general construction; changing from dual-fuel to a single fuel burner involves one or two minor parts. Fuel changeover on dual-fuel burners can be manual or automatic.

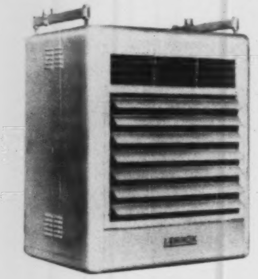
LENNOX INDUSTRIAL HEATERS...FROM 280,000 TO 2,000,000 BTUH

LISTED BY UNDERWRITERS' LABORATORIES, INC.



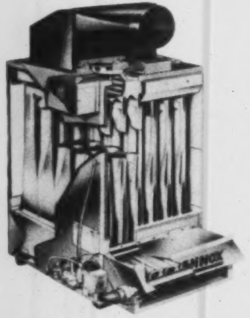
"AT" SERIES

Features such as one master controller, stainless steel combustion chamber, double casing with metal radiation shield and exclusive 4-pass counter flow design have made the "AT" Series a leader in industrial heating.



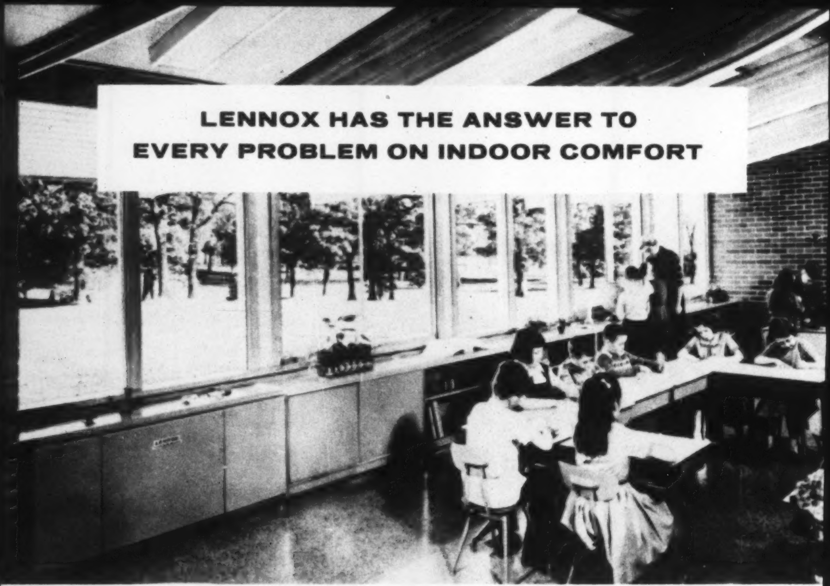
GAS UNIT HEATERS

Individually adjustable louvers diffuse warm air over wide area. Easy balancing is assured by special hangers . . . cut installation time. Optional equipment includes fan control and air shutters for units using manufactured gas.



GAS DUCT HEATERS

Space saving design plus economical operation and installation flexibility gives this heater a wide range of uses. Can be used alone or added to an existing system. Either way, expect this heater to cut heating costs from the day it's installed.



LENNOX HAS THE ANSWER TO EVERY PROBLEM ON INDOOR COMFORT

Revolutionary New

LENNOX "Comfort Curtain"

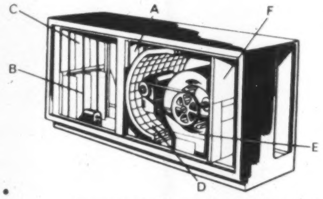
. . . PROVIDES GREATER COMFORT AT LOWER COST PER SQ. FT. IN SCHOOLS AND OTHER COMMERCIAL BUILDINGS

The Comfort Curtain system is drastically reducing the installed cost of school heating and ventilating. Costs per square foot of $1.03 in Indiana, $1.15 in Montana, $1.12 in South Dakota are typical examples.

By using the long preferred method of residential heating, the Lennox Comfort Curtain makes these exceptional savings a reality. Eliminated are the pipes, boilers, towering chimneys and inflexible heating plants that have made average heating installation costs considerably higher.

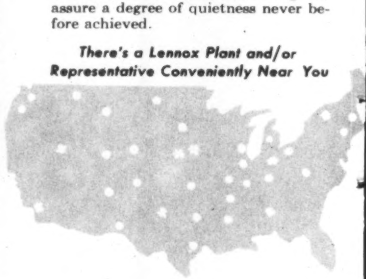
But most important of all, the Comfort Curtain simply does a better heating job. There's an even flow of air throughout the building, room temperatures remain constant and a supply of fresh air is distributed continuously.

THE "SECRET" IS IN THIS SPECIAL AIR PROCESSING UNIT—DELIVERS HEATED AIR, PROVIDES VENTILATION AND COOLING WITHOUT REFRIGERATION



Lennox Air Processing Unit introduces fresh air in adjustable volumes (A); transmits warm air (B) from adjacent or remote heating unit; continuously recirculates indoor air (C); filters air clean (D). Lennox's exclusive floating blower (E) and acoustical lining (F) assure a degree of quietness never before achieved.

There's a Lennox Plant and/or Representative Conveniently Near You



LENNOX Industries Inc.
Established 1895

Form No. HPAC-58-12

Litho in U. S. A.

Lennox Industries Inc., Dept. HPAC
P. O. Box 1294 • Des Moines 5, Iowa

Gentlemen:

I am interested in the items checked below. Please mail complete information to me on . . .

☐ "OG" SERIES
☐ "AT" SERIES
☐ UNIT HEATERS
☐ GAS DUCT HEATERS
☐ COMFORT CURTAIN
☐ Have your representative see me.

Name ....

Address ....

City .... *Zone* .... *State* ....

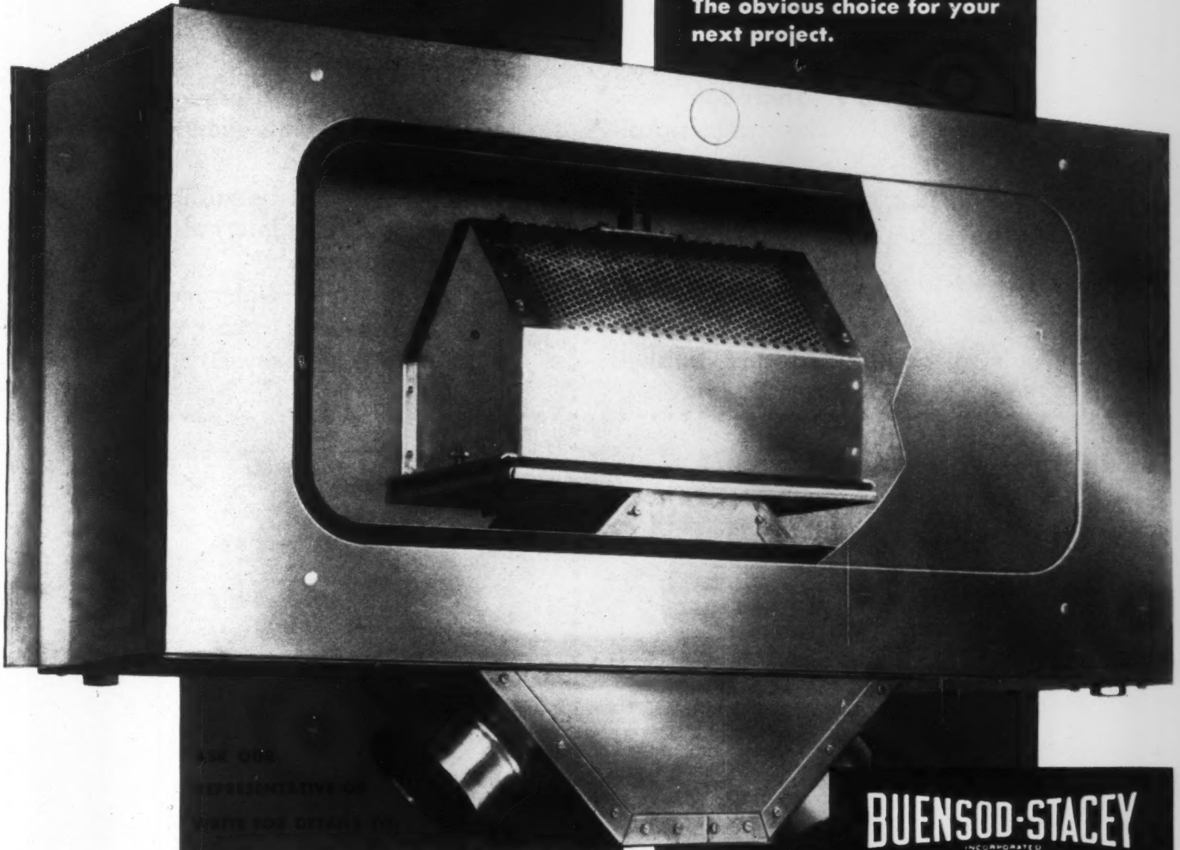
DUAL-DUCT

WITH DIRECT, AUTOMATIC VOLUME CONTROL

Exclusive with Buensod dual-duct air mixing units is direct volume control without the use of a sensing instrument. They maintain constant air quantity through each unit regardless of variance of static pressure on either inlet or outlet of mixing value.

NOW AVAILABLE IN ALUMINUM!

For the first time, you can order dual-duct air mixing units made of aluminum, inside and out. It's a Buensod first. Only Buensod makes aluminum air mixing units. Lighter by 60 per cent. Corrosion-resistant. The obvious choice for your next project.



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WRITE FOR DETAILS TO:

BUENSOD-STACEY, Inc.

BUENSOD-STACEY
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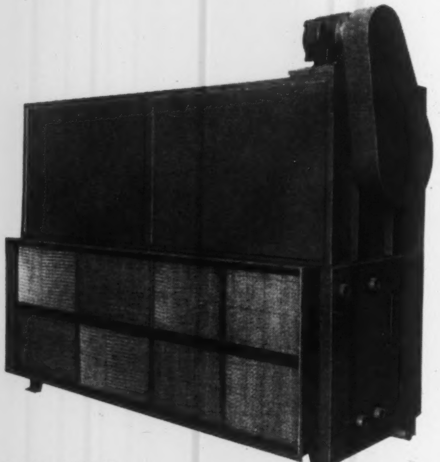
THERMAL

AIR CONDITIONING EQUIPMENT

- ENGINEERED FOR MAXIMUM EFFICIENCY
- BUILT FOR LONG LIFE
- SPECIFIED WITH CONFIDENCE

DESIGN FEATURES

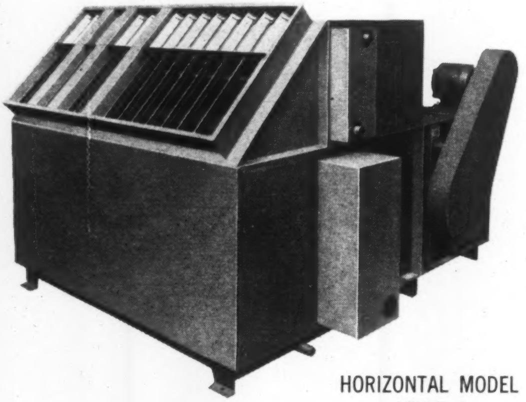
1. Thermal units are of sectional construction, which means greater overall ruggedness.
2. All sections welded, to produce maximum rigidity. Thorough reinforcement of sections adds sturdiness.
3. Specially designed slide rails permit ready removal of coils for cleaning.
4. Cabinets fabricated of best quality, black, cold-rolled furniture steel.
5. Cabinets bonderized and finished with baked-on enamel for strong protection against corrosion.
6. Drain connections side-mounted to avoid encroachment on head room.
7. Horizontal air flow through cooling coils in vertical units eliminates hold-up of condensate.
8. Conditioners can be furnished with by-pass only, or internal face and external by-pass.
9. Units available with combination filter and mixing boxes, for either high or low velocity filters.



VERTICAL MODEL

CENTRAL PLANT AIR CONDITIONERS

22 Casing Sizes 500 to 35,000 cfm
Horizontal and Vertical Models
1 to 100-tons cooling capacity



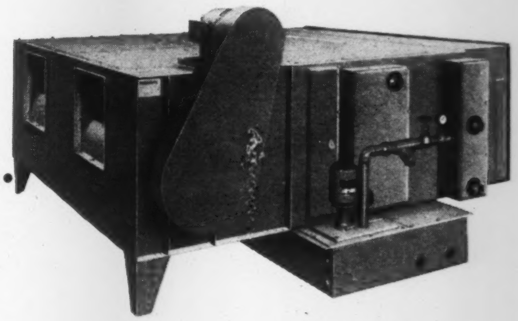
HORIZONTAL MODEL
STYLE A

MULTIZONE CONDITIONERS

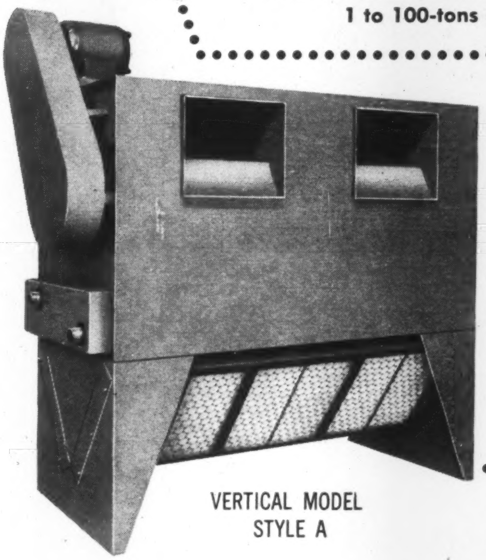
22 Casing Sizes 500 to 35,000 cfm
Horizontal and Vertical Models
1 to 100-tons cooling capacity

SPRAYED COIL CONDITIONERS

22 Casing Sizes 500 to 35,000 cfm
Horizontal and Vertical Models
1 to 100-tons cooling capacity



HORIZONTAL MODEL

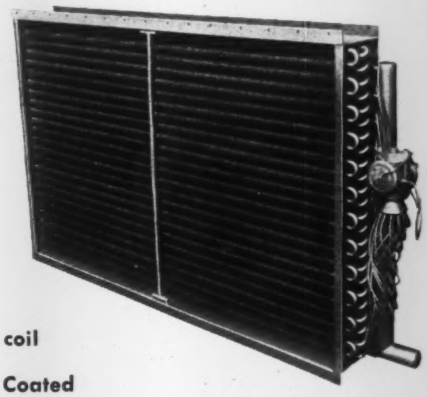


VERTICAL MODEL
STYLE A

HEATING and VENTILATING UNITS

4 Models — Vertical, Inverted, Horizontal, Wall Type
3 Types — 1 Fan, 2 Fan, 3 Fan
22 Casing Sizes in Each Model
500 to 35,000 cfm

DIRECT EXPANSION COIL



COOLING and HEATING COILS

Non-Freeze Steam
Direct Expansion
Standard Steam
Chilled-Water (incl. cleanable tube type)
Hot-Water
1 to 10 Rows — Cooling
1 to 4 Rows — Hot Water
1 & 2 Rows — Steam
.81 to 30.62 sq. ft. face area in one coil
Copper Tubes — Aluminum Fins
Copper Tubes — Copper Fins — Solder Coated

See our exhibit at the 14th International Heating & Air Conditioning Exposition, Convention Hall, Philadelphia, January 26-29, 1959, Booth No. 16.

1 FAN MODEL

AIR COOLED CONDENSERS

6 Basic Sizes (5 to 20 tons) can be installed in multiple for any greater tonnage.

ADVANTAGES

- Low first cost.
- Winter head pressure control.
- Low maintenance cost.
- Low operating cost.
- Built for indoor or outdoor installation.

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Quality Products Since 1945.

THERMAL ENGINEERING CORPORATION

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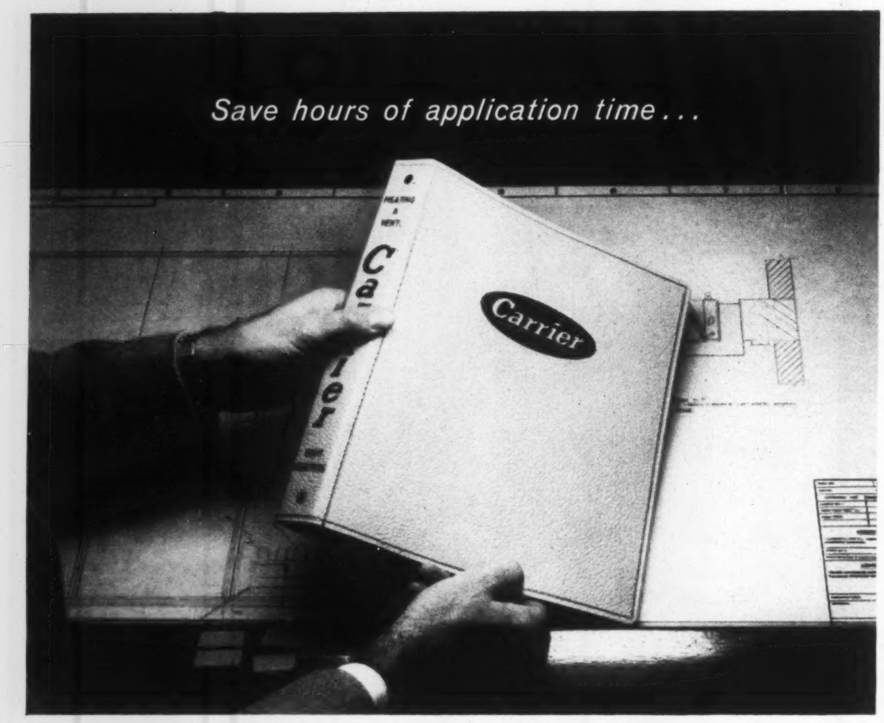
HOUSTON 19, TEXAS



Save hours of application time . . .

Carrier offers every type of heating equipment for any commercial or industrial job!

The book shown above can save the hours you now spend wading through a shelfful of catalogs to find the best equipment for a heating or ventilating job. It's the Carrier Heating and Ventilating handbook, and it is available to all architects and consulting engineers simply by opening the Yellow Pages of your telephone directory and phoning the Carrier Unit Heater Agent listed under "Heaters—Unit."

You'll find him a helpful person for other reasons, too. He will recommend precisely the equipment you need for any job, and because his Carrier Unit Heater Line is the most complete in the industry, his only interest is to suggest exactly the right units for your applications. For example:

For steam or hot water unit applications, Carrier offers you cabinet heaters; vertical, horizontal, and exclusive 4-way discharge units in a wide capacity range.

For heavy-duty heating and/or ventilating tasks, Carrier gives you a complete variety of fan-coil units and accessories, plus new Heat Diffusers—Direct Fired for gas, oil or combination fuel firing.

For your gas-fired unit heater and duct furnace requirements, Carrier provides a full selection of compact models.

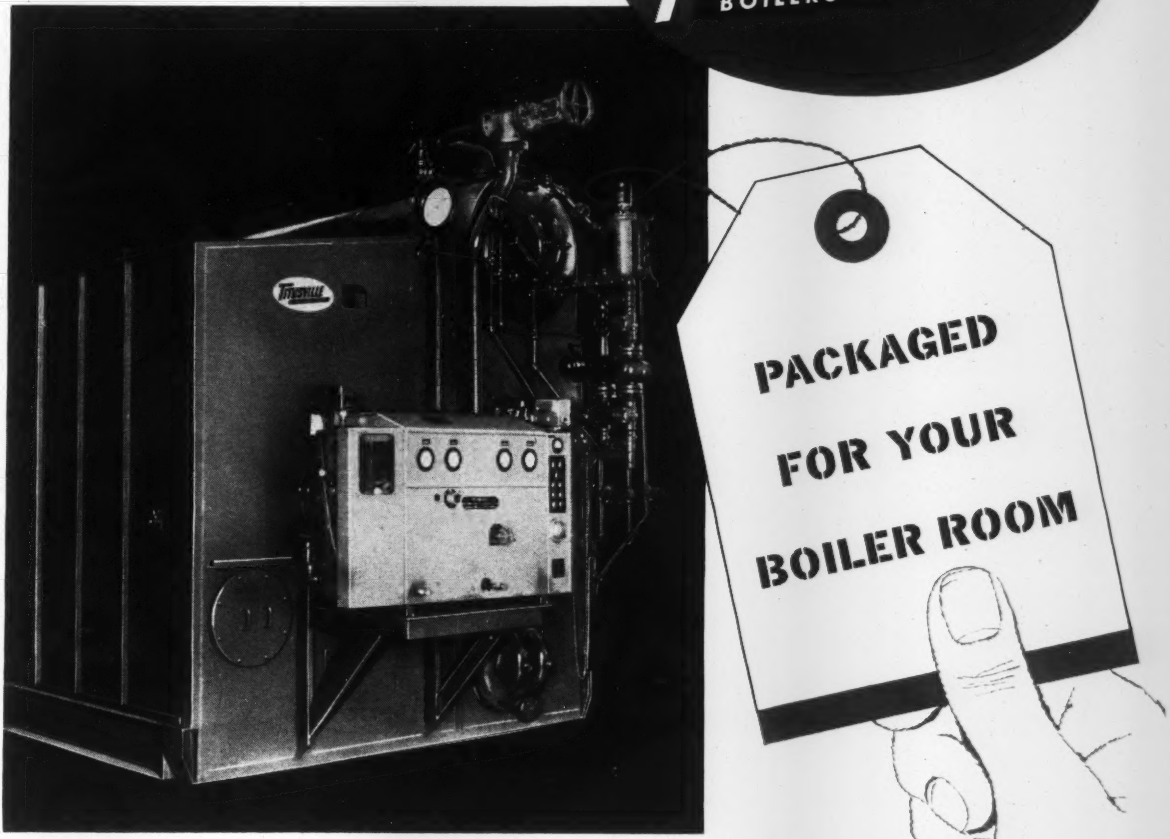
Cut your heating equipment selection time. Get performance you know Carrier delivers. Call your Carrier Unit Heater Agent, or write Carrier Corporation, Syracuse, N. Y.

Carrier

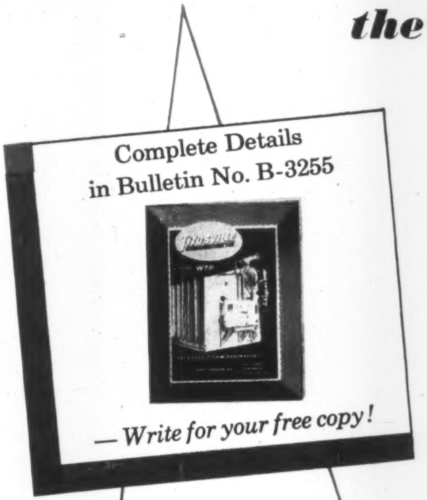
industrial heating
air conditioning
refrigeration

quality-built by TITUSVILLE

BOILERS SINCE 1860



the Titusville type WTP
packaged steam generator


Complete Details in Bulletin No. B-3255

— *Write for your free copy!*

A completely factory-assembled, fully-equipped steam generator, the popular Titusville Type WTP is easily transported by rail or truck—ready for operation as soon as connected to fuel, steam and utility services. Compact in size, of TITUSVILLE quality in every detail, this advanced unit is supplied in capacities from 10,000 to 60,000 lbs of steam per hour. *Let us quote on your needs.*

THE TITUSVILLE IRON WORKS CO.

A Division of

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TITUSVILLE, PENNSYLVANIA

Manufacturers of A Complete Line of Boilers for Every Heating and Power Requirement
Plants at Titusville, Pa. and Warren, Pa.
Offices in Principal Cities

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BOILERS for Power and Heat . . . High and Low Pressure . . . Water Tube . . . Fire Tube . . . Package Units

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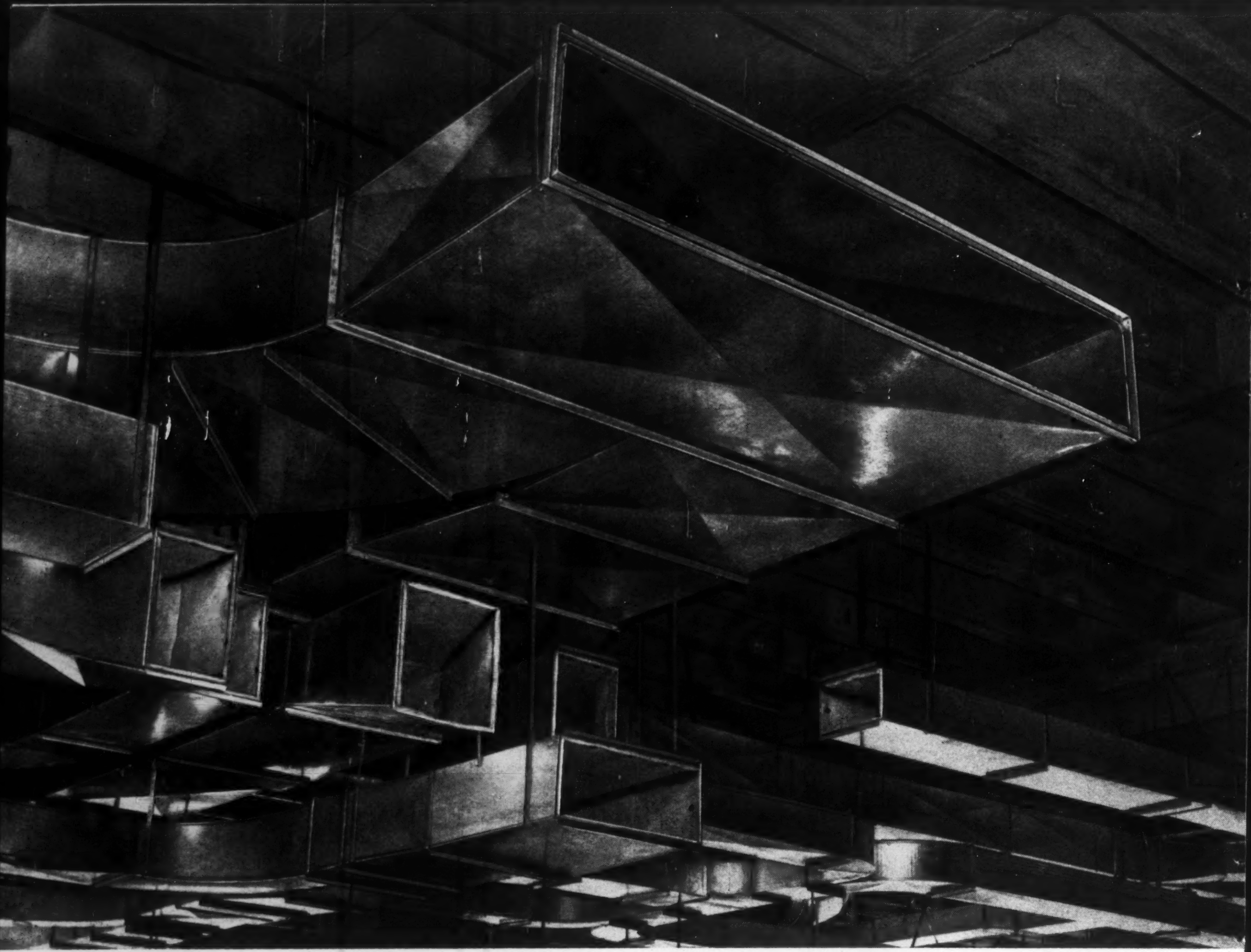


All ductwork was fabricated in Dallas by the Straus-Frank Company.

Ductwork made from USS Galvanized Steel installed in two Dallas Mercantile Buildings

It took 285 tons of galvanized steel sheets to make ductwork to air-condition the recently constructed Mercantile Dallas Building and the eight floors added to the Mercantile Continental Building in Dallas, Texas. An unusual inter-building heating and refrigerated-water air-conditioning system ties these structures to the older Mercantile Securities and Mercantile National Bank Buildings.

About 80% of the ductwork was made from USS Galvanized Steel Sheets. They were selected because of their excellent strength, formability, and zinc adherence.

USS is a registered trademark

United States Steel Corporation—Pittsburgh
Columbia-Geneva Steel—San Francisco
Tennessee Coal & Iron—Fairfield, Alabama
American Steel & Wire—Cleveland
United States Steel Supply—Steel Service Centers
United States Steel Export Company

USS United States Steel

IT MAKES SENSE !

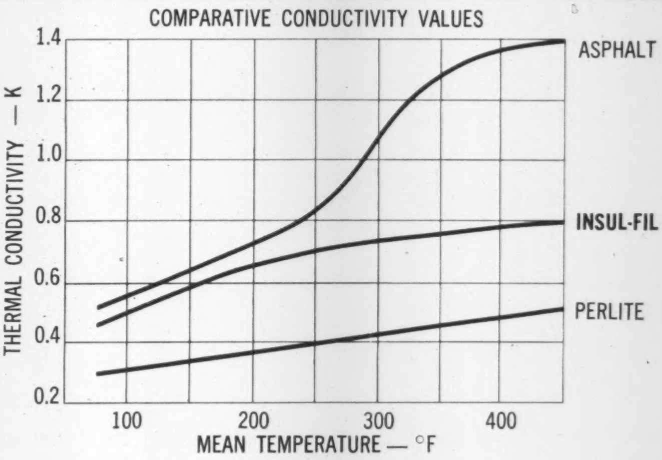
TO INSULATE UNDERGROUND PIPING WITH

insul-fil®

1 Introduction of a material such as expanded perlite into a granulated hard asphalt improves the insulating value of the blend.

2 Proper selection of asphalts by softening point to make up asphalt-perlite blends improves the insulating properties of the blend.

3 Introduction of an aggregate, such as perlite, into a granulated asphalt improves the mechanical properties of the blend once it is plasticized.



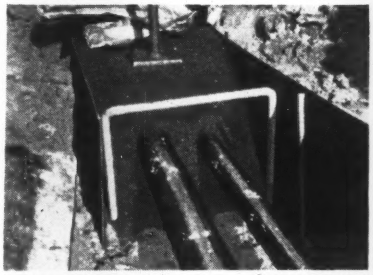
After years of extensive testing conducted at the Research and Development Department of The Atlantic Refining Company, these conclusions were presented in a Paper given before the American Chemical Society in Dallas, Texas, April, 1956. Since that time, hundreds of Insul-fil field installations have confirmed these conclusions.*

It is a well-known fact that the use of asphalt in construction created the necessity for the introduction of fillers (usually inorganic) of various types for the purpose of arresting the flow characteristics and improving the insulation value of the asphalts themselves.

The blend of hard granular asphalt and asphalt coated perlite gives Insul-fil its excellent insulating properties, water resistance and sufficient structural strength to the insulating body to resist normal soil stresses with the steam on or off.

An important Insul-fil development is the priming of the pipe with Accelerator #7591. The use of accelerator provides continuous adhesion of Insul-fil to the pipe, hastens consolidation, and gives additional protection against corrosion by galvanic action.

**Paper available on request.*



Insul-fil Is Simple To Install

Just pour it around the pipe to be insulated. Prod and tamp it in place and backfill. Heat introduced into the pipe forms the conduit.

Insul-Fil Company Inc.
250 Pettit Avenue
Bellmore, Long Island, N. Y.

Please send literature.

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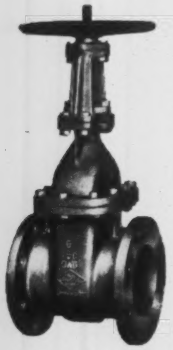
insul-fil ***The most efficient Granular Fill Type Insulation for Hot Underground Piping***

Insul-Fil Company Inc. DIVISION OF: MIRACLE ADHESIVES CORPORATION, 250 PETTIT AVENUE, BELLMORE, LONG ISLAND, N. Y.



In this **Split Wedge Gate**

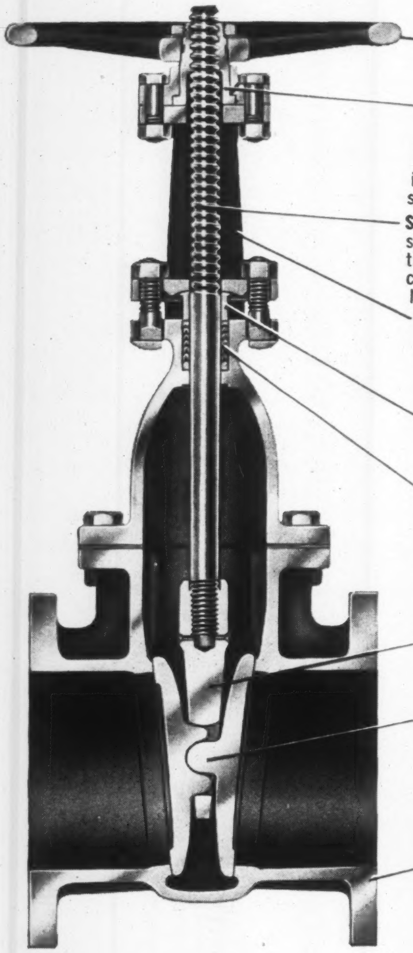
you can see why it pays to

Specify **JENKINS** for
STAINLESS STEEL Valves, too

This picture shows the many points of excellence in the design and construction of Jenkins Fig. 1327 Split Wedge Stainless Steel Gate Valves. Compare them with any valve you know. You'll conclude that it's hard to beat Jenkins at making valves, no matter what the material.

But no picture can show the quality of the castings . . . the precision machining . . . the rigid inspection and testing that have gone into this valve. All of these are as important as design and metal alloys in assuring long, dependable, economical valve service. And, all of them are up to the peak standards for which Jenkins has been known for almost a century.

SEND FOR NEW CATALOG of Jenkins Stainless Steel Valves. You'll find in it the patterns you want, in a choice of alloys that satisfy the requirements of practically all corrosive services. Also, you'll see that these Jenkins valves meet valve industry specifications and the high standards established by the leading users of stainless steel valves. Jenkins Bros., 100 Park Avenue, New York 17.



WHEEL of high strength malleable iron designed for firm grip and easy operation.

YOKE BUSHING, easily renewable. Made of bronze, for ideal thread engagement with stainless steel spindle, to prevent seizing or galling of spindle threads. Bushing of stainless steel is optional.

SPINDLE has long thread bearing surfaces with correct lead for easy, tight closing. Screws into wedge carrier, then secured by a stainless steel pin.

YOKE BONNET has liberal space between yoke arms for easy access to packing box. Precision machined flange face assures uniform contact with gasket for a tight body-bonnet joint.

GLAND consists of two pieces — gland flange and gland follower — eliminates binding of follower in case gland bolts are tightened unevenly.

PACKING of Chevron-type Teflon in large packing box prevents leakage. Only a minimum load is required on gland, extending service life of packing.

WEDGE CARRIER connects wedge to spindle and raises or lowers it. Husky in size to stand any operating strains.

SPLIT WEDGE is the ball-and-socket design which automatically adjusts to the tapered seating surfaces for positive shutoff. The discs, revolving freely in the wedge carrier, produce a self-cleaning action on seating surfaces and reduce possibility of galling and seizing.

BODY —Through-port design for full, free flow. Ample wall thickness and good design provide extra strength to withstand stresses. End flanges conform to M.S.S. specs.

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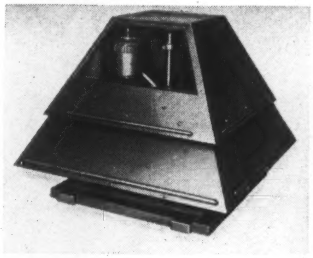
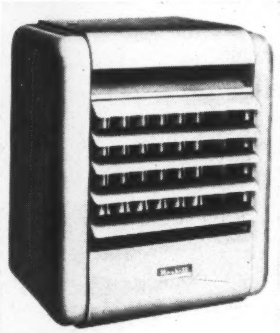


Roof Ventilators . . .

. . . with non-overloading wheel, spun streamlined inlet with large access door, motor, V-belt drive—*American Standard, American Blower Div., Dept. HPAC, Detroit* 32.

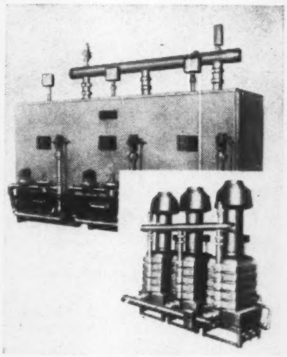
"Model CR" centrifugal roof ventilator line includes 13 basic ventilator sizes with various motor and drive combinations in 111 sizes. Capacities range from 1120 to 34,440 cfm at free delivery to 26,540 at 1 in. WG. Ventilator wheel has 12 die-formed blades reverse mounted between heavy duty backplate and die-formed streamlined rim. Entire drive assembly supported on rubber insulators. Ventilator housing made of heavy gage steel, phosphorized for corrosion resistance prior to enamel finish.



Unit Heaters . . .

. . . designed for wide range of applications—*John J. Nesbitt, Inc., Dept. HPAC, State Rd. and Rhawn St., Philadelphia* 36.

"Series K" includes 10 models in sizes 25,000 to 250,000 Btu per hr input. Units range 66 to 310 lb in weight, 18 to 36 in. in height. Controls for heaters located at rear of unit for accessibility; bottom pans hinged for internal access. No internal switches.



Gas-Fired Boiler . . .

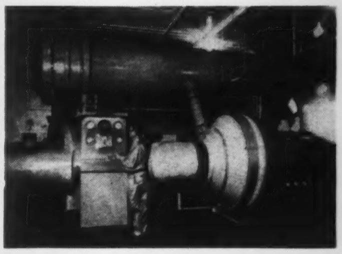
. . . in design making possible modulation of gas input automatically with changing load conditions—*Hydrotherm, Inc., Dept. HPAC, Clinton Ave., Northvale, N. J.*

"Multi-Temp" heating plant composed of individual cast iron heat exchangers with patented horizontal sections manifolded into common supply, return header. Each heat exchanger has combustion chamber and set of gas controls to fire in response to aquastats in return header. Return water temperature automatically controls number of heat exchanger units in operation. Boilers approved for input ratings to 3,600,000 Btu per hr on manufactured, natural, propane gas.

Split Case Pumps . . .

. . . developed for hot and cold water — *Peerless Pump Div., Food Machinery and Chemical Corp., Dept. HPAC*, 301 *W. Avenue* 26, *Los Angeles* 31.

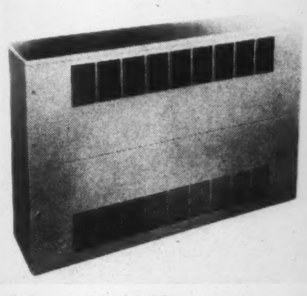
Intended for general purpose water applications, "AquaLine" pumps available in shaft sealed types in 1½ to 4 in. discharge sizes and in packing gland types in 4 to 8 in. discharge sizes. Capacity and head ranges of packing gland types are up to 2600 gpm and 280 ft, respectively; capacity and head ranges of shaft sealed types are up to 950 gpm and 350 ft, respectively. Liquid temperature limits for shaft sealed types is 180 F, for packing gland types, 250 F. Motor sizes range ½ to 75 hp.



Centrifugal Compressor . .

. . . in hermetic design and new 1500 ton capacity—*Carrier Corp., Dept. HPAC, Syracuse* 1, *N. Y.*

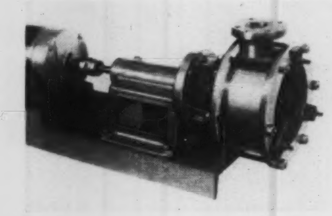
New addition to company's line of compressors raises number of combinations to 52. All models use voltages and currents obtainable in multi-story buildings, industrial plants. Hermetically sealed motor cooled by passing refrigerant around, through motor windings.



Cabinet Unit Heaters . . .

. . . developed for applications requiring rapid concentration of heat or where heat losses are high—*Kritzer Radiant Coils, Inc., Dept. HPAC,* *325 N. River St., Batavia, Ill.*

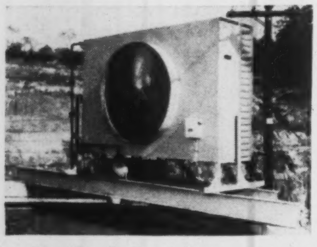
Line includes six basic sizes with standard or high capacity coils—500 to 1200 cfm—up to 430 EDR. Units are 32 in. high and 10 in. deep, can be installed as floor, wall, or ceiling mounted. Trip strips, three or four sides, provide for full or partial recessing. The 1050 rpm motors with permanently lubricated bearings drive tandem, double width, double inlet, aluminum, centrifugal fans. Four speed control available.



PVC Centrifugal Pumps . . .

. . .combining corrosion resistance with centrifugal pump design—*Vanton Pump & Equipment Corp., Dept. HPAC, 201 Sweetland Ave., Hillside, N. J.*

Line of pumps constructed with all wetted parts of unplasticized, unmodified PVC. Available in four pump sizes in capacities from 10 to 130 ft. gpm with discharge heads to 100 ft. Solution temperatures to 140 F can be handled. PVC casing protected by cast iron frame. Equipped with mechanical shaft seals in range of materials for corrosive applications. Pumped fluid contacts only facings of rotating and stationary rings.



Air Cooled Condensers . . .

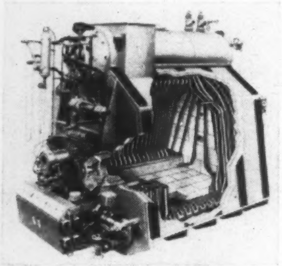
. . .in 10 new models with capacities of 30 through 100 tons—*Halstead & Mitchell, Dept. HPAC, Bessemer Bldg., Pittsburgh 22.*

Condensers produced in basic units of 30, 35, 40, 45, 50 tons; also offered as twin units with 60, 70, 80, 90, 100 ton capacities. Necessary manifolding for interconnecting twin units provided. Single units, "AC-3" through "AC-50-1," are self-contained, single fan units. Units have fins with embossed patterns designed to add surface area, improve heat transfer up to 15 percent.

Room Air Conditioners . . .

. . .in four types, each available in 200, 300, 400, 600 cfm sizes—*Young Radiator Co., Dept. HPAC, 709 S. Marquette St., Racine, Wis.*

Free standing "Roomaire" remote air conditioner is 9 in. deep, 25 in. high. Cabinet casing completely removable. Large filters can be changed without removing front or cabinet.



Packaged Boiler . . .

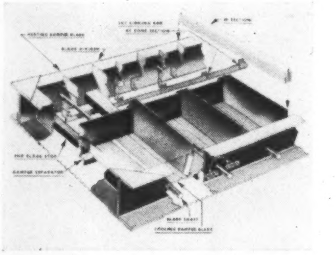
. . .available in capacities 4000 to 13,000 lb per hr of steam—*Superior Combustion Industries, Inc., Dept. HPAC,* 1475 *Broadway, New York* 36.

Mechanical draft fan mounted at rear of "Model AS" boiler, leaving firing front open, providing positive air cooling of heat exchanger floor and front firing wall, says manufacturer. Rotary burners standard on all sizes. All automatic gas fired units equipped with continuous gas pilot.

Flexible Air Duct . . .

. . .designed for materials handling—*Wiremold Co., Dept. HPAC, Hartford* 10, *Conn.*

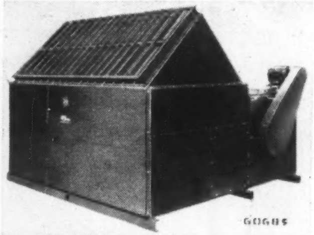
"Type 8K-1D" flexible air duct combines heavy, abrasion-resistant, neoprene coated cotton fabric with electro-galvanized steel spiral for heavy duty bulk materials handling applications. Fabric component mechanically locked into steel spiral. Said to be easily bent, cut, installed.



Central Station Units . . .

. . .for independent and variable zone controls—*Drayer-Hanson, Div. of National-U. S. Radiator Corp., Dept. HPAC,* 3301 *Medford St., Los Angeles* 63.

Features of "FZ" line cited by manufacturer: sensitive control; reduction of outlet velocity air noise; lower zone outlet velocity; redesigned damper action incorporating features of opposed blade action; elimination of crank arms for rod and addition of divider blade between damper. Units available in nine models and 32 different zone arrangements.



Multi-Zone Units . . .

. . .designed to heat and cool simultaneously—*McQuay, Inc., Dept. HPAC,* 1600 *Broadway, N. E., Minneapolis* 13.

"MC" multi-zone units furnish determined areas with either filtered, cooled and dehumidified air, or with filtered, heated and humidified air or mixture of either in desired proportion. Available in 11 sizes from 1370 to 38,000 cfm. Six zone dampers on smallest unit and on up to 22 dampers on largest. All zones interconnected by single external connecting rod.

"B&W helps me match the tube to the job

As a design engineer, I work with all types of steel heat exchanger tubing. B&W can produce all of our requirements, in the grades, sizes and types I need."

It's true. Whatever your steel heat exchanger tubing requirements may be, B&W can meet them promptly and dependably. Take a look at the scope of B&W's operations in this field—seamless and welded stainless steel tubing, seamless and welded carbon steel tubing, seamless alloy steel tubing—with heat treatment, mechanical properties, surface finish, tolerances and length matched to the job.

What's more, B&W district sales offices in principal cities from coast to coast along with three manufacturing locations insure prompt handling of your tubing requirements. You can depend on B&W, too, for assistance in selecting the tube which will meet all of the requisites of fabrication and end use service. Call on Mr. Tubes, your local B&W district sales representative, or write for Bulletin TB-329. The Babcock & Wilcox Company, Tubular Products Division, Beaver Falls, Pa.

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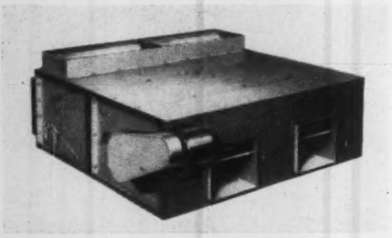
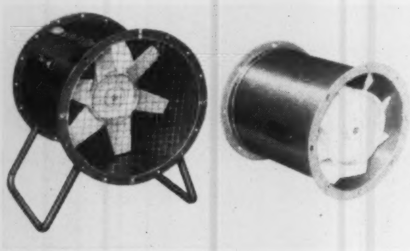


Heating and Ventilating Units . . .

. . . in sizes for building applications—*Modine Mfg. Co., Dept. HPAC, 1509 De Koven Ave., Racine, Wis.*

Units available in air volume capacity ranges from 600 to 33,000 cfm. Offered in five types for horizontal ceiling, inverted, vertical, floor mounting. Components consist of combination filter-mixing boxes; standard mixing boxes; flat, medium and high capacity filters; external, internal face and bypass dampers; fixed and swing nozzles; discharge and return air plenums; wall intake boxes; humidifiers; vibration isolators; standard steam and steam distributing heating coils.



Tubeaxial Fans . . .

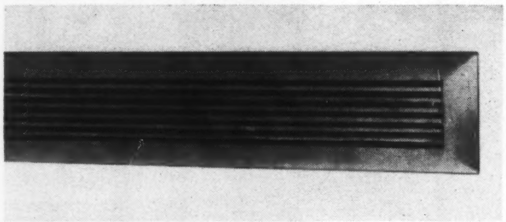
. . . developed for use in industrial applications—*Propellair Div., Robbins & Myers, Inc., Dept. HPAC, 1345 Lagonda Ave., Springfield, Ohio.*

"Type DT" fans equipped with matched design motors, propellers. Available with propeller diameters of 8, 12, 16, 20 and 24 in., cast of magnesium-aluminum sparkproof alloy in airfoil designs. Capacities range 200 to 12,000 cfm from free air to 5 in. SP. Fan drives by totally enclosed motors equipped with sealed, prelubricated cartridge bearings. Single or polyphase motors in all standard voltages; high temperature Class B and explosionproof motors also available.

Gas Torch Assembly . . .

. . . with five tips ranging from blow torch to fine pointed flame—*Mutual Liquid Gas Equipment Co., Dept. HPAC, 17129 S. Broadway, Gardena, Calif.*

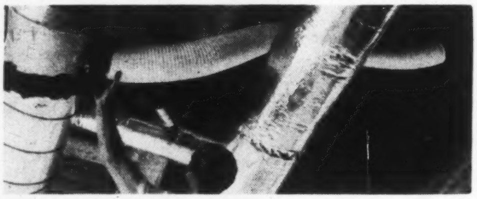
Each of five tips of "No. 6" torch assembly has complete orifice and air mixing chamber. Tips include: "No. 6-5"—heavy duty flame; "No. 6-4S"—high velocity flame; "No. 6-4"—broad flame; "No. 6-A" pointed flame; "No. 6-B"—small pointed flame. Torches operate on full tank pressure or with regulator.



Aluminum Grilles . . .

. . . designed to match wide range of architectural finishes—*Waterloo Register Co., Inc., Dept. HPAC, P. O. Box 72, Waterloo, Ia.*

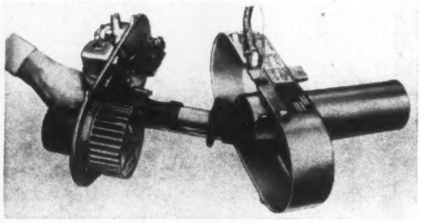
New grilles available in one-piece continuous construction to 12 ft in length intended for floor, sill, wall applications. Face bars are 1/4 in. on 1/2 in. centers. Use of extruded aluminum throughout makes flexibility of design possible. New grilles available in eight types with five border styles. Included in line are return or exhaust grilles, supply grilles.



Flexible Duct . . .

. . . in combination of aluminized asbestos cloth and steel spirals—*United States Rubber Co., Dept. HPAC, Rockefeller Center, New York.*

New duct composed of two elements: "Asbeston," asbestos cloth protected by laminated, polyester-reinforced aluminum foil; and electro-galvanized steel spiral. Fabric available in lengths to 20 ft and with inside diameters ranging 3 to 12 in.

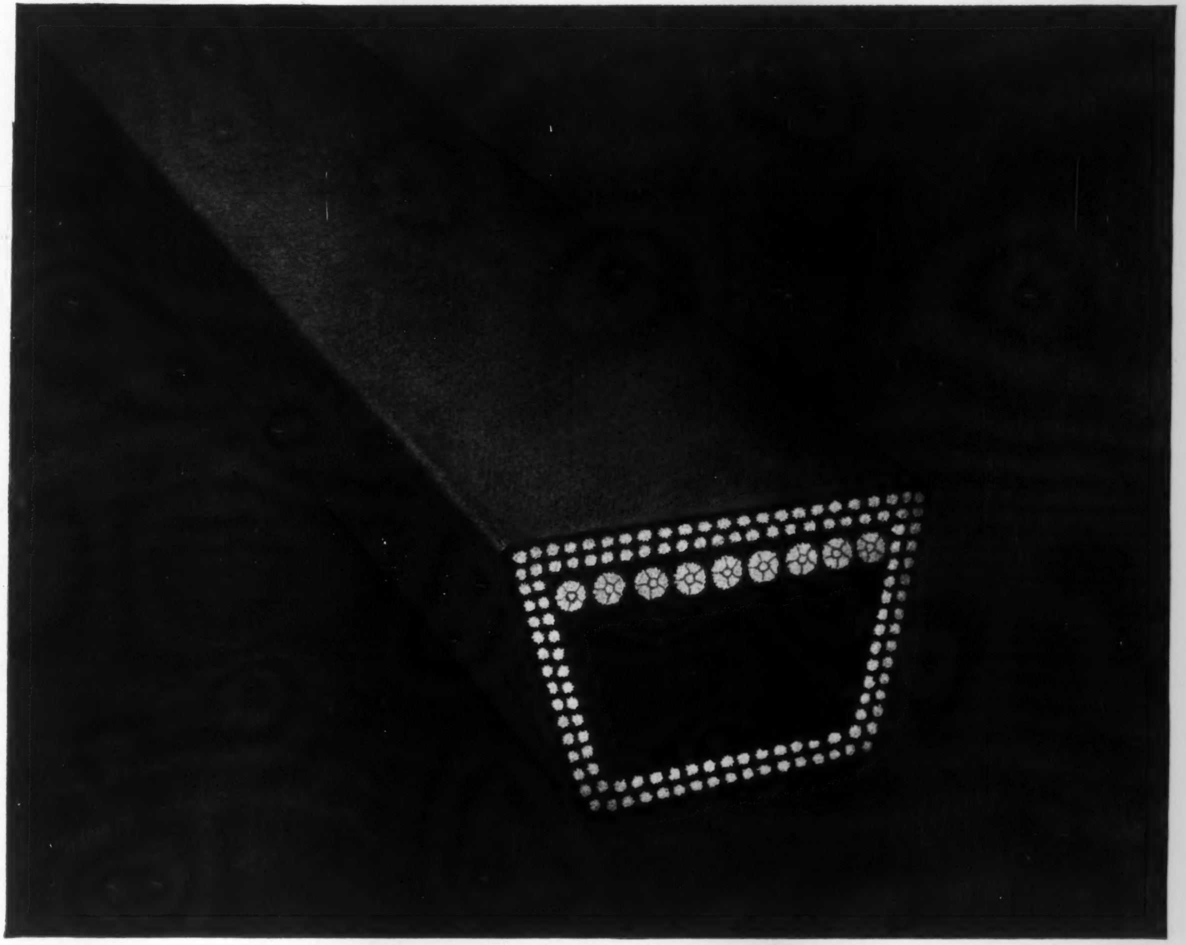


Inshot Gas Burner . . .

. . . with input range 200,000 to 400,000 Btu per hr—*Nu-Way Corp., Dept. HPAC, 2416 Fourth Ave., Rock Island, Ill.*

All operating parts and factory wiring of "Model G-400" burner located on removable mounting panel; panel can be removed from aluminum burner housing for maintenance. Orifices can be changed, air adjustments made without removing panel. Safety features include main gas valve shutoff which operates when blower is not up to normal speed.

ROYAL F. H. P. V-BELTS



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Advanced developments such as these have given "U. S." Royal V-Belts an acceptance unequalled in the industry.

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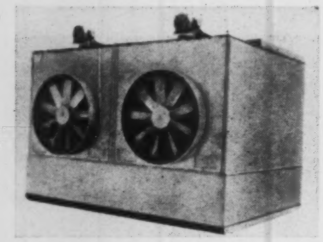
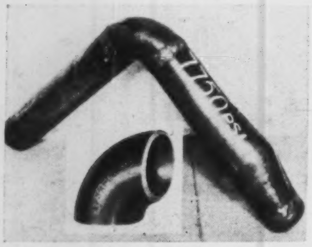


Dual Cooling Towers . . .

. . . in two fan design to permit single-cell operation for flexibility and control of cold water temperatures—*Marley Co., Dept. HPAC, 222 W. Gregory Blvd., Kansas City 14, Mo.*

Two-fan "Aquatowers" have extended capacities into 250 to 400 gpm range. Shipped as unit, towers designed with heavy gage, hot dipped galvanized casings and basins.



Welding Fittings . . .

. . . designed for 7750 psi pressures—*Nibco Inc., Dept. HPAC, 500 Simpson St., Elkhart, Ind.*

"Husky" line of fittings includes: straight and reducing tees; 45 and 90 deg elbows; concentric reducers 2 through 6 in. Fittings made from A 106, Grade B, seamless carbon steel tube.

Drive Straps . . .

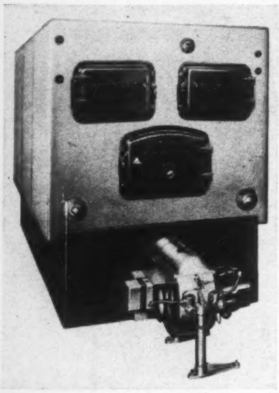
. . . developed for hanging thinwall and rigid conduit, pipe, cable, tubing in masonry materials—*Holub Industries, Inc., Dept. HPAC, Sycamore, Ill.*

Electroplated finish steel drive straps can be driven in masonry without bending or breaking, according to manufacturer. Available in two styles: annular thread for wood; vertical thread for masonry. Produced for ½, ¾, and 1 in. sizes.

Power Roof Ventilator . . .

. . . in new low silhouette—*Greenheck Fan & Ventilator Corp., Dept. HPAC, Schofield, Wis.*

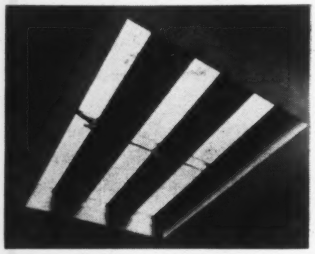
"Tucson" air mover in all steel low silhouette construction. Unit has exhausting capacity of 200 to 20,000 cfm.



Oil Fired Boiler . . .

. . . in new design—*Weil-McLain Co., Dept. HPAC, Michigan City, Ind.*

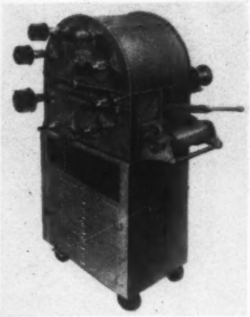
"B-HO-44" oil heating unit rated with net load range of 1,145,000 to 2,709,000 Btu per hr and 4770 to 11,290 sq ft of steam radiation. Oil burners incorporate delayed oil flow principle.



Skylight Roof Ventilator

. . . with translucent glass fiber dampers, gutters that provide natural light—*Swartwout Co., Dept. HPAC, 18511 Euclid Ave., Cleveland 12.*

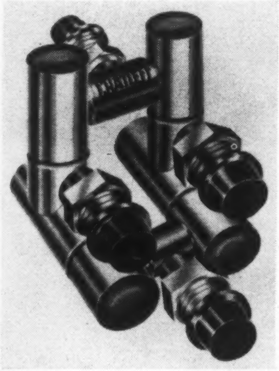
Glass fiber dampers and gutters of "Lite-'n-Aire" unit said to be strong, non-warping, resistant to damage from fumes, chemicals. Can be used as primary daylight source in many applications. Each 7 ft 6 in. × 10 ft unit has 30 sq ft of free air opening; overall height is 21½ in. Safety feature opens link mechanism when temperature exceeds 212 F.



Copper Cleaning Unit . . .

. . . developed to automatically clean copper fittings, clean and cut copper tubes—*Stockmeister and Prins, Dept. HPAC, Wellston, Ohio.*

Power driven steel wire brushes of "Clean-O-Matic" unit clean nine standard sizes of copper fittings ½ to 4 in. Brushes oscillate to clean fittings; brushes held in place by chucks. Tube cutter, tube burr remover, tube reamer, tube cleaner mechanisms integral parts of unit. One switch controls 1/3 hp 110 volt, a-c current electric motor. Nylon gears, bearing journals are self-lubricating. Machine is 51 × 24 × 32 in.



Heat Pump Valves . . .

. . . designed to provide loop in liquid line which maintains constant flow direction regardless of pumping direction—*Chatleff Valve & Mfg. Co., Dept. HPAC, P. O. Box 996, Austin, Tex.*

"DFC" valve, connected to receiver, said to provide constant regulation of charge in reverse cycle operation in same manner fluid is regulated in conventional cooling circuit. Offered in wide range of sizes.

BICYCLE
808
How *much* vibration is all right?

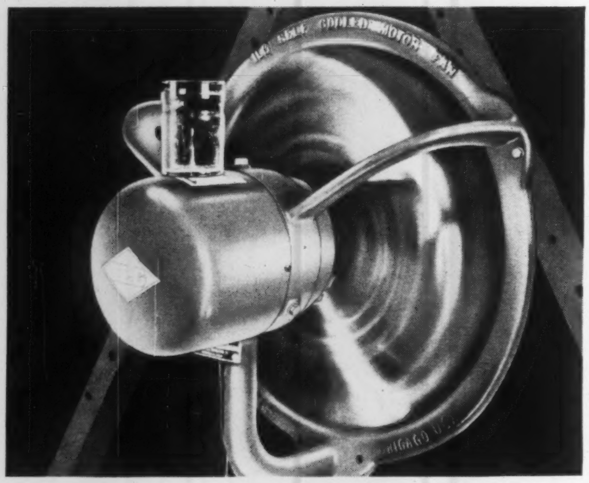
How much vibration is all right?

When it's ventilating equipment...

When *you* specify ventilating equipment, what do *you* consider most important? What features do *you* insist on? What contributes most to the quality of equipment *you* want?

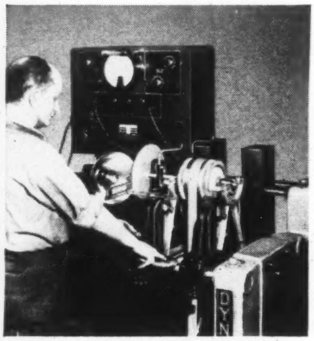
To nail down these answers for us, an independent research organization conducted a nationwide survey among consulting mechanical engineers.

Here's how ILG fans and motors, stay vibration-free,

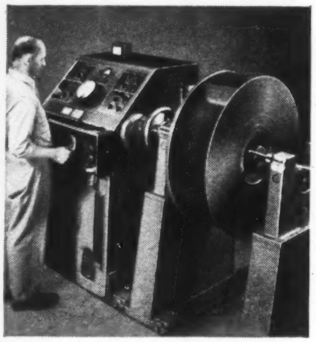


Full Speed Ahead — and still not a ripple in the water. With Ilg direct-connected propeller fans you get operation as *vibration-free* as it's possible to be. Ilg's "One-Name-Plate" pledge of performance covers *both* the dynamically balanced, patented Type "Q" fan wheel and the permanently lubricated, self-cooled motor.

Ready with the Rotor! All rotating *parts* in Ilg-built motors are checked for static and dynamic balance. After final assembly, Ilg Motors undergo additional checks. Smooth, *vibration-free* operation assures long life—and a quiet one—for *all* Ilg Motors.



Checks and Balances. Ilg Centrifugal Fan Wheels—with Backward Curved (BC) Blades and Airfoil design—have to "check out" before being direct-connected to 3-phase or permanent-split capacitor, single-phase Ilg-built motors.



For fans built to satisfy your "specs"...

See us at the show
in Booths 517 and 521

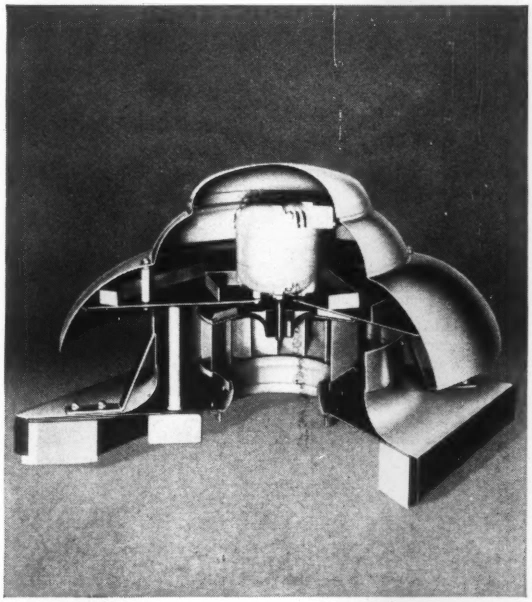
consulting engineers vote for vibration-free fans on 9 ballots out of 10

Results of the poll? Nine times out of ten *vibration-free operation* ranks foremost among those who specify fans and ventilating equipment.

As shown below, Ilg Fans and Ventilators are as *vibration-free* as it's possible to be. But that's only *one* reason why it pays to choose Ilg. Not to be overlooked are these additional points preferred by consulting engineers: minimum maintenance, low operating costs, ease of repair, quietness.

For further details of why Ilg rates so high with those who specify, send for Catalog No. 153 on propeller fans, Bulletin No. 257 on Airfoil centrifugals, Bulletins 2301 and 2700 on power roof ventilators.

ILG *power roof ventilators cost less to operate*



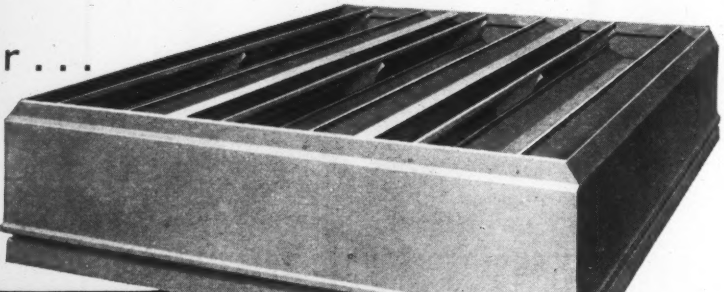
Look Under the Hood of this Ilg Power Roof Ventilator and you'll see why it's such a popular purchase. Ilg Backward Curved Aluminum Airfoil Centrifugal Fans assure smooth, quiet air flow and low shock loss. Permanently lubricated, self-cooled, direct-connected Ilg Motors eliminate belt maintenance, friction losses, slippage.

David and Goliath? Just name the exhaust or supply propeller fan power roof ventilator that fits your capacity and kind-of-building needs—and Ilg has it. 11 different sizes, all direct-connected fan and motor for quiet, *vibration-free* operation and low maintenance. All components dynamically balanced for lifetime alignment.

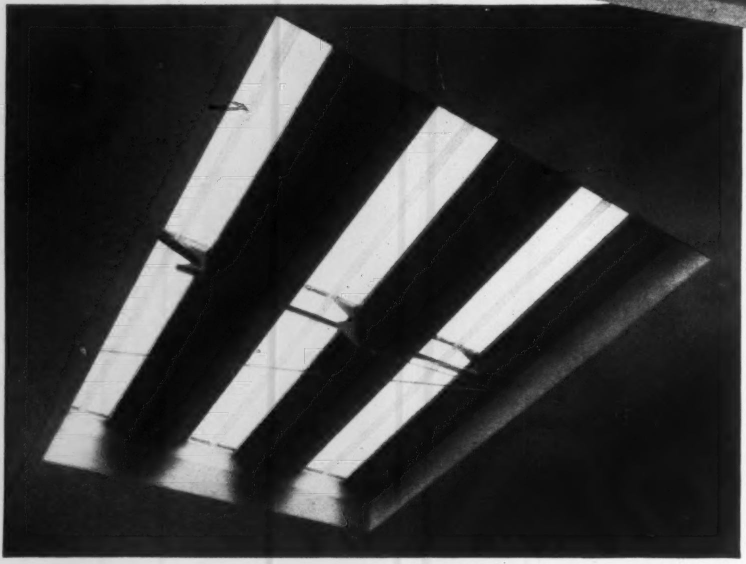
specify ILG®

ILG ELECTRIC VENTILATING COMPANY
2826 N. Pulaski Road, Chicago 41, Ill.
Offices in 57 Principal Cities
Member of Air Moving and Conditioning Association, Inc. (AMCA)

It's a ventilator . . .



It's a skylight . . .



Patent No. 2,784,660

NEW!

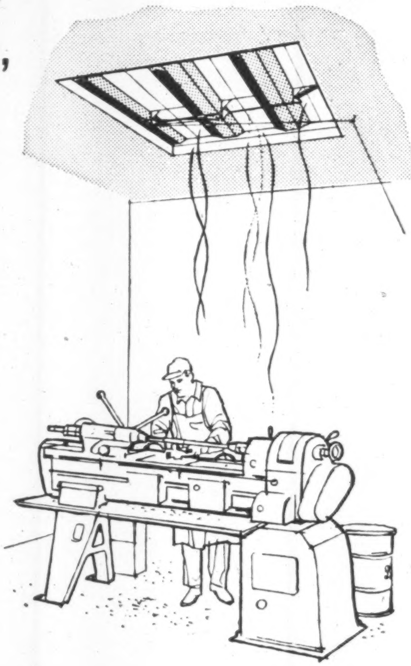
Lite-'n-Aire
by
Swartwout

One unit, one installation, one cost!

- Strong, translucent Fiberglas* dampers and gutters transmit soft, diffused light . . . no glare or hot spots . . . up to 12,380 candlepower with dampers closed, 16,450 with dampers open.
- High capacity gravity ventilator moves air silently and efficiently. Low 21" roof silhouette is inconspicuous from the street. 30 square feet of free opening provided by each standard unit.
- Extra safety — fusible link mechanism opens dampers automatically when temperature exceeds 212° F. to vent out fumes, smoke, flames. Light transmission prevents power failures from completely darkening buildings.
- Unique Lite-'n-Aire provides ventilation, skylighting and fire relief all in a single, economical unit. Two sizes — 7'6" x 10' and 5' x 5' — fit any situation.

These and many other advantages are all available **now** in the new Swartwout Lite-'n-Aire.

Write for free 8-page folder now. Ask for bulletin CAM-3.



The Swartwout Co.
Ventilation Engineering
18568 Euclid Avenue Cleveland 12, Ohio

* TM Owens-Corning Fiberglas Corporation

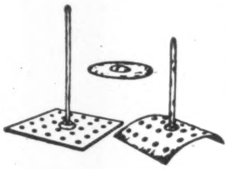
See Booth 222, International Heating & Air Conditioning Exposition.

For Economical Installation
Use Miracle Surface Anchors and Miracle Adhesives

adhesive applied Miracle Surface Anchors

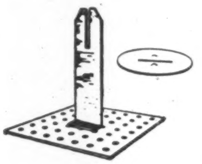
Miracle Surface Anchors provide firm, positive support for block, fibrous glass, and board types of insulation, furring strips, wood sills and headers, conduits, pipes, fixtures, etc., on all types of clean, rigid structural surfaces. These clips also provide anchorage in otherwise inaccessible locations. Miracle Surface Anchors consist of perforated metal plates 2" x 2" or 2¾" x 2¾" to the center of which is welded a spindle, prong, nail, bolt or threaded stud; selection depends upon the material and load to be supported. The perforated base is designed to provide anchorage by bonding it to masonry, metals, plaster, tile, glass, etc., with Miracle Anchor Adhesives which are manufactured in various formulations to meet job requirements. Consult your local Miracle representative for details covering any special installation.

description



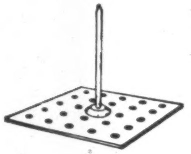
Spindle Anchor and Washer

For bonding cork, fibrous glass batts, thermal cellular glass, mineral wool, etc., to ducts, walls and ceilings.



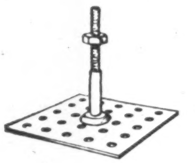
Pronged Anchor and Washer

For bonding block insulation such as thermal cellular glass to ducts, walls and ceilings. Pronged Anchors are set between rows of block insulation and prongs bent in reverse direction over blocks.



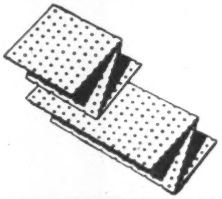
Anchor Nail

For bonding furring strips to masonry walls for the attachment of wallboard.



Anchor Bolt

For attaching cabinets, towel, tissue and other types of dispensers to tile or other rigid surfaces.



Z Clip

A self furring clip for attaching wallboard, plasterboard, insulation board, etc. to exterior walls when an air space is required.

direct adhesion

The following list of adhesives, sealers, and coatings has been developed for both on-the-job and production line applications. They may be applied by trowel, brush, spray and roller-coating.

type M	For bonding corkboard to submarine and ship hulls. Meets U.S. Navy Spec. MIL-A-18065
type AA	Anchor Adhesive for bonding Miracle Surface Anchors to metal or masonry walls, ducts, etc. Service temperature range —30° to +180°F.
HT 4620	Anchor Adhesive for bonding Miracle Surface Anchors on overhead installations and where heat resistance higher than AA is required. Service temperature range —30° to +225°F.
ER 475	2 part Anchor Adhesive for bonding Miracle Surface Anchors where highest heat resistance is required. Service temperature range —30° to +325°F.
PF 42	For bonding low density fibrous glass, sheet cork, Asphalt impregnated pads, mineral wool, aluminum foil—also for bonding woven asbestos cloth to ducts and blanket type lightweight insulation in metal buildings
PF 52	For bonding low density fibrous glass, mineral wool, vapor barrier paper —longer open time than PF 42
PF 62	For bonding blanket type fibrous glass to metal ducts and surfaces—high heat resistant
PF 72	For bonding low density fibrous glass to polystyrene or other rigid plastics
PF 122	For bonding medium density fibrous glass and corkboard to metal, wood, masonry, also as sound deadener for sheet metal
PF 232	For bonding high density fibrous glass, wool batts, sheet-cork. Non-flammable emulsion type adhesive
MF 22	For bonding fiberboard, corkboard, expanded plastic insulating materials, etc. to any structurally sound surface. Also for insulation and vapor barrier materials to metal or concrete roof decks.
LT 153	For bonding fiberboard, corkboard, etc. to metal or masonry in cold room applications. Low cold test
PS 82	For bonding expanded plastic foam type insulation. Approved by Dow Chemical Co. for bonding Styrofoam.
RT 1000	Two part rubber latex type adhesive used for bonding Styrofoam insulation. Approved by Dow Chemical Co.
FO 409	Cold Setting mastic to replace hot asphalt mopping on the back of cellular glass insulation when placed in ceiling forms with Miracle Surface Anchors before pouring concrete.
ER 428	Epoxy Resin 2 part material for bonding aluminum honeycomb to glass, metal, asbestos board, etc.
CA 30	Contact Type Adhesive for bonding paper honeycomb to glass, metals, asbestos board, etc.
VT 530	For sealing vinyl facing strips to vinyl aluminum covered fibrous glass insulation.

Miracle coatings and sealers for insulation

primer	For priming metal or masonry surfaces also as a vaporseal and/or waterproofing coat
SF 313	Vapor barrier coating for molded fibrous glass—also adds to structural strength.
SF 466	On-the-job sealer to bond white wrap-around vapor barrier paper on molded fibrous glass pipe insulation
SF 209	On-the-job sealer to bond black wrap-around vapor barrier paper on molded fibrous glass pipe insulation
SD 555	Joint sealer for high velocity ducts

MIRACLE ADHESIVES CORPORATION

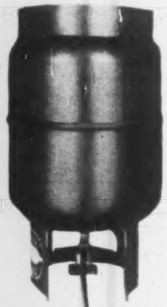
250 PETTIT AVENUE
BELLMORE, LONG ISLAND, N. Y.

Ask Your Air Conditioning Equipment Manufacturer for —

THE LATEST IN SMALL, LIGHTWEIGHT SERVICE CHARGING CYLINDERS FILLED WITH REFRIGERANT 22

Stock sizes in REFRIGERANT 22 capacities of: 50lb. - 25lb. - 15lb.

Air conditioning equipment manufacturer's brand name and no. shown on label.



Convenient for liquid charging (as shown) as well as gas charging (in standing position).

Stack conveniently to save space.

Check These Many Features:

- RIGID MOISTURE AND QUALITY CONTROL
- Blue Plastic seal on valve outlet is your assurance of maximum dryness quality and purity.
- Seals are printed "MAXIMUM DRYNESS—FACTORY SEALED."
- LESS WASTE BECAUSE OF OVER OR UNDER CHARGE
- Choice of small cylinder sizes to suit each system. (Less cost per cylinder.)
- EASY TO HANDLE — lightweight, small cylinders with built-in hand grips. (50 lb. size only 22 lb. empty.)
- NO HOOD CAPS TO LOSE — Valve protected by permanent collar.
- STACKING RINGS SAVE VALUABLE SPACE
- Valve protection collar also serves as stacking ring. Uniform ring on all sizes enables mixed stacking.
- CAN BE USED IN BOTH UPRIGHT POSITIONS
- Equally convenient for gas or liquid charging.
- No mounting blocks necessary.
- NO VALVE WRENCHES NEEDED — Handwheel already on cylinder valve.
- STANDARD FITTING ALREADY ON VALVE
- Sturdy cylinder valve complete with flare nut ready for charging connection to standard 5/16 O.D. tubing. Also adapter to fit 1/4" flare female connection supplied at no charge.
- YOU CAN DELIVER AIR CONDITIONING SYSTEM COMPLETE WITH FULL REFRIGERANT CHARGE ANY TIME OF THE YEAR
- NO FREIGHT OR DEPOSIT PROBLEMS ON CYLINDERS
- Prices include freight on full cylinders and on return of empties.
- No cylinder records needed—deposit of $12.00 each for all three sizes of cylinders refunded regardless of cylinder number.

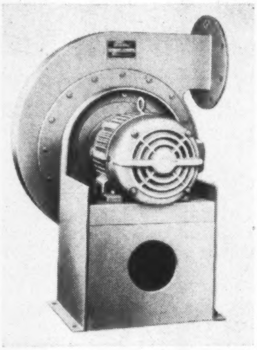
ASK FOR THE *BLUE* CYLINDER WITH THE PROTECTING STAND RING

Air Conditioning Equipment Manufacturers Send Inquiries to:

PENNSYLVANIA ENGINEERING CO.

1107-21 NORTH HOWARD STREET PHILADELPHIA 23, PENNA.

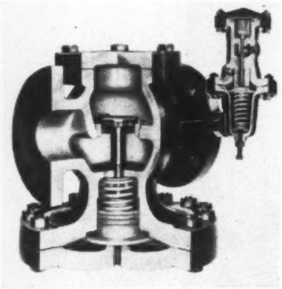
Patent Applied for



Turbo-Pressure Blowers . .

. . .designed for quiet operation—*Chicago Blower Corp., Dept. HPAC, 9856 Pacific Ave., Franklin Park, Ill.*

Blowers said to be capable of providing constant pressure with varying air volumes. Have extra heavy motor shafts for safety and screened venturi inlet to cut turbulence for vibrationless operation, according to manufacturer. Blowers available in sizes from 1/3 to 50 hp capable of delivering 125 to 5250 cfm of air. Operating temperatures to 750 F.

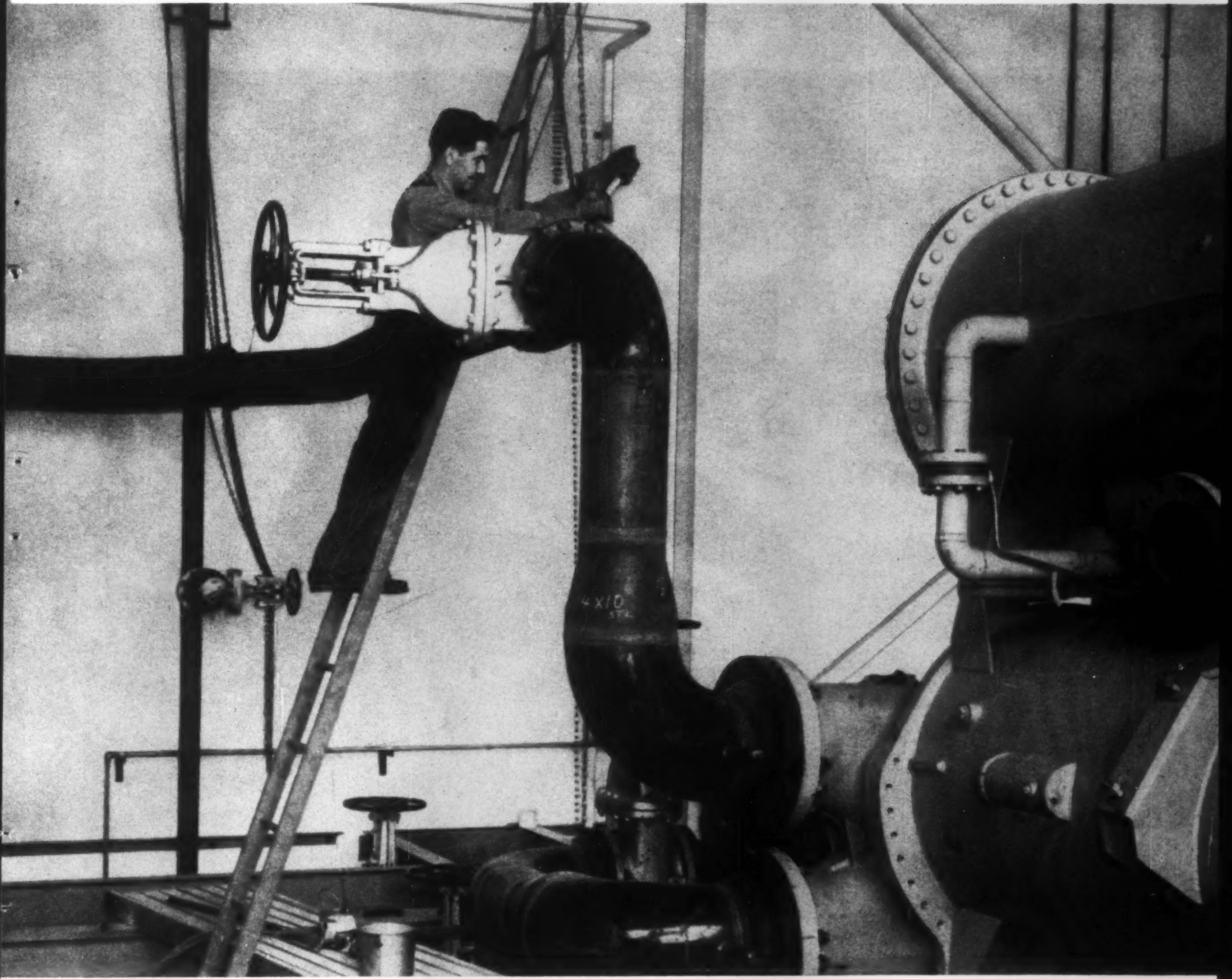


Steam Pressure Regulators

. . . in design incorporating integral bleed orifice which eliminates one interconnecting pipe line—*Kiely & Mueller, Inc., Dept. HPAC, 64 Genung St., Middletown, N. Y.*

"Type 471" steam pressure regulator consists of main valve that will handle pressures of 125 or 250 lb; also includes external pilot valve. Unit made in 11 body sizes from ½ to 6 in. Use of blind flanges on main valve and pilot makes units accessible for inspection, cleaning. Packless construction said to eliminate binding. Strainer protects pilot valve.

(Continued on page 298)



SPANG Steel Pipe carries corrosive Trichlorethylene for the Ford wind tunnel, where engineers conduct experiments in aerodynamics and radiator, ventilation, and air conditioning development.

SPANG Steel Pipe carries corrosive brine in Ford Motor Company wind tunnel

160°F above zero to −20°F . . . those are the conditions under which the Ford automotive testing wind tunnel operates. There can be no room for material or mechanical failure here.

In this installation, SPANG Steel Pipe carries corrosive brine in the refrigeration machinery, which produces extreme weather conditions for testing and developing radiators and air conditioning systems as well as aerodynamics testing.

SPANG Steel Pipe is manufactured under strict *quality-control* conditions and thoroughly tested and inspected to assure you of *top-quality* installations and performance.

For your next job: make it steel pipe . . . make it SPANG.

Plumbing Contractor:
James & Roach, Inc., Detroit, Michigan

SPANG
CW'
STEEL PIPE

THE NATIONAL SUPPLY COMPANY

Subsidiary of Armco Steel Corporation ARMCO

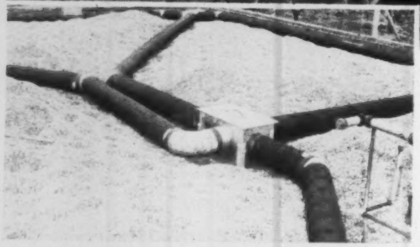
TWO GATEWAY CENTER, PITTSBURGH, PA.

here's how you can

BID LOWER

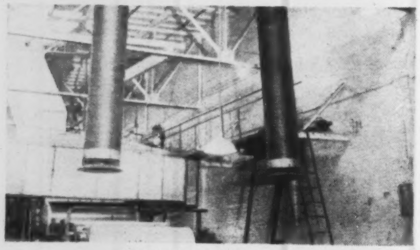
by cutting your duct cost!

SONOAIRDUCT



For Residential Systems

For Commercial Systems



For Industrial Systems

1662

Figure your next estimate based on using

SONOCO
SONOAIRDUCT®
FIBRE DUCT

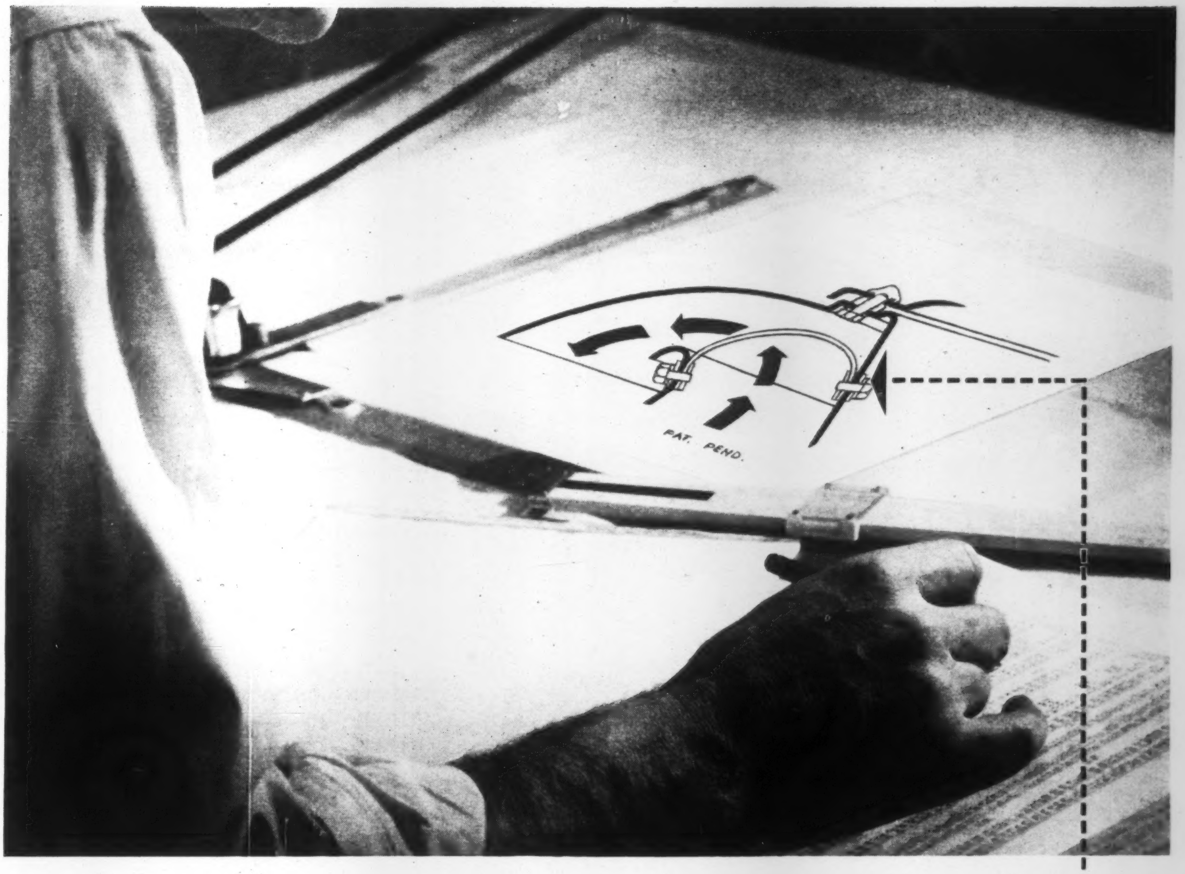
In slab perimeter heating or combination heating and cooling systems!

You'll be able to bid lower without lowering construction quality, because SONOAIRDUCT saves you installation time, labor and money! It handles easy, levels quickly. Aluminum foil lined. 23 sizes—2" to 36" I.D., in standard shipping lengths of 18'. Other lengths available, which can be sawed on the job. The larger diameters are ideal for commercial and industrial heating and cooling where duct is encased in concrete. Meets and exceeds F.H.A. criteria and test requirements for this type product. Free installation manual. See our catalog in Sweet's.

For complete information and prices, write

SONOCO
Construction Products
SONOCO PRODUCTS COMPANY

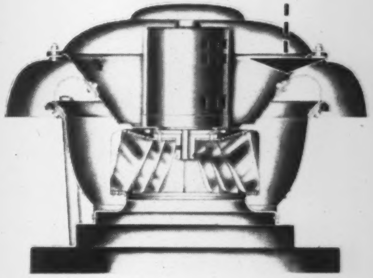
- HARTSVILLE, S. C.
- LA PUENTE, CALIF.
- MONTCLAIR, N. J.
- AKRON, INDIANA
- LONGVIEW, TEXAS
- ATLANTA, GA.
- BRANTFORD, ONT.
- MEXICO, D.F.



Engineered Silence

U-spring suspension absorbs 44% more vibration than rubber isolators

...and only Jenn-Air Exhausters have it!



There are two reasons why vibration isolation is a critical factor in exhauster design. *First,* any reduction in vibration results in a corresponding decrease in noise—an important consideration in restaurants, schools, hospitals and similar installations where quiet operation is a must. *Second,* excess vibration causes wear and tear on motors, blades and other moving parts, cuts exhauster life expectancy.

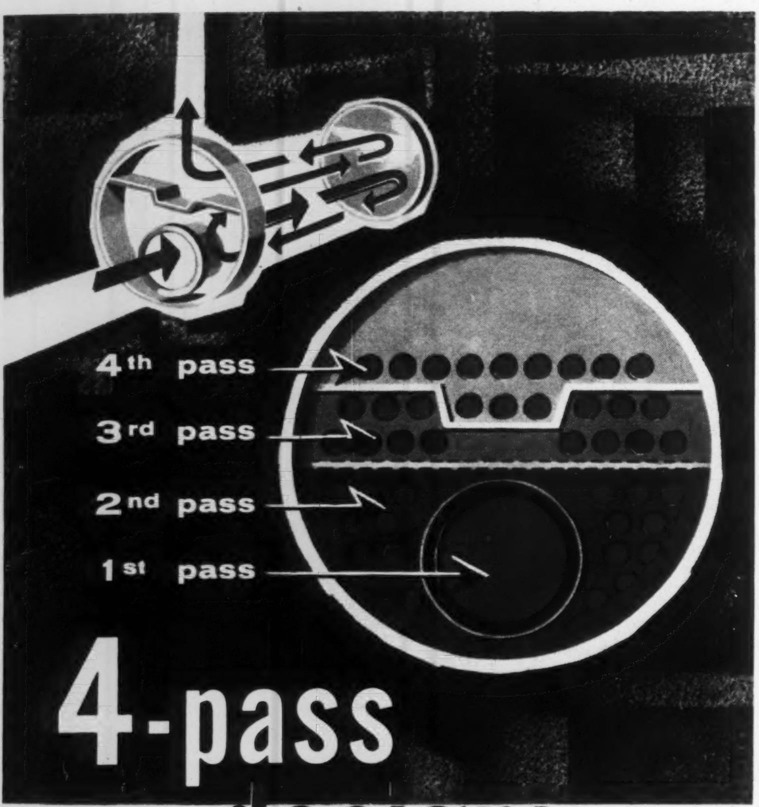
Research at Pittsburgh Testing Laboratory has proven that, compared to rubber mountings, U-springs reduce vibration by 44%. An exclusive Jenn-Air engineering development, U-spring suspension absorbs vibration more effectively because it compensates for both radial and lateral movement. Furthermore, Jenn-Air U-springs are *guaranteed for life!* They are made of stainless steel so they will not wear out—ever. More than 75,000 Jenn-Air units are now in service without one case of suspension breakdown.

Gain the benefits of less noise and longer life: When you specify power exhausters, make it Jenn-Air. Available in a complete range of centrifugal and axial blade models for roof or wall installation. Air-moving capacities from 175 to 22,700 cfm. Request full line Bulletin 58-B.

JENN-AIR

Jenn-Air Products Co., Inc.
1102 Stadium Drive
Indianapolis 7, Indiana

Member of Air Moving and Conditioning Association



4-pass design:

High fuel-to-steam efficiency for greater fuel economy

EVERY CLEAVER-BROOKS boiler has 4-pass fire tube construction — to scrub more heat from the flame. Maintains high flue-gas velocity . . . to provide right conditions for optimum heat transfer. This is just one of the Four Design Standards that make pre-engineered Cleaver-Brooks boilers your best packaged-boiler buy.

Other Design Standards

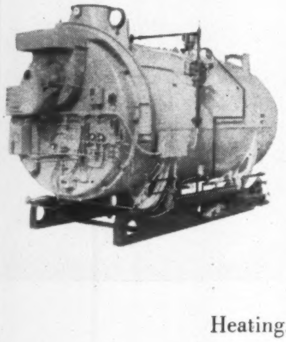
5 SQ. FT. OF HEATING SURFACE per boiler horsepower — prolongs boiler life, assures greater efficiency and lower maintenance.

FORCED DRAFT supplies air for efficient combustion, regardless of draft conditions. Easiest to maintain of all air-control methods.

UPDRAFT CONSTRUCTION — Low furnace keeps hottest combustion gases well below water level for safety's sake.

This exclusive combination of Design Standards is the key to the superiority of Cleaver-Brooks packaged boilers, 15 to 600 hp, 19 sizes, 130 models; steam or hot water; oil, gas or combination oil/gas fired.

For all the facts, call your boiler man from Cleaver-Brooks or write Cleaver-Brooks Company, Dept. A, 313 E. Keefe Ave., Milwaukee 12, Wisconsin.

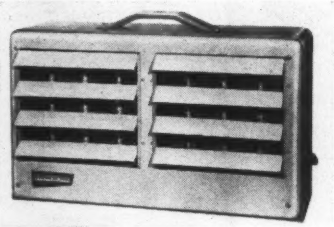


Cleaver Brooks®

ORIGINATOR AND LARGEST PRODUCER
OF PACKAGED BOILERS

EQUIPMENT DEVELOPMENTS

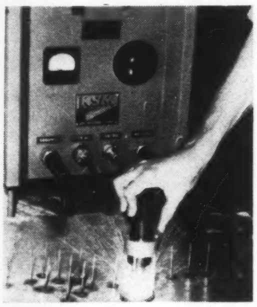
Continued from page 294



Electric Heater . . .

. . . for commercial and industrial applications—*Electromode Div. of Commercial Controls Corp., Dept. HPAC, P. O. Box 1052, Rochester 3, N. Y.*

Adjustable deflectors on "C and I" model heater permit warm air to be directed where desired; fan delay switch prevents heater from blowing cool air during initial operation. Heaters made in two capacities: 5 kw with an output of 17,075 Btu per hr; 10 kw with an output of 34,150 Btu per hr.



Stud Welder . . .

. . . developed for end welding studs to light gage metals—*KSM Products, Inc., Dept. HPAC, Yale and Woodland Ave., Merchantville, N. J.*

"PS-1 Percussive Stud Welding Unit" welds small studs up to 3/16 in., fasteners to combinations of ferrous and non-ferrous metals. Fasteners can be welded to highly polished stainless steel, coated or enameled sheets, other metals without distortion, warping, burn through, discoloration, says manufacturer. Small 2½ lb portable hand tool holds stud, closed circuit allowing welding current to be discharged when placed against work surface. Operates from 115/240 volt, single phase, 60 cycle, a-c generator.

How to Harness High Velocity Air

. . . facts about the selection of control units for efficient design, constant cfm delivery, and simplified stabilization of a system

Design and balancing of high velocity systems are greatly simplified by correct selection of currently available air control units. Three basic types meet all requirements: 1. *air valves;* 2. *constant volume regulators;* 3. *double-duct control units combining valves and regulator.*

These controls can be used independently or in combination, their application depending upon available duct space, noise control, balancing requirements, and other variables.

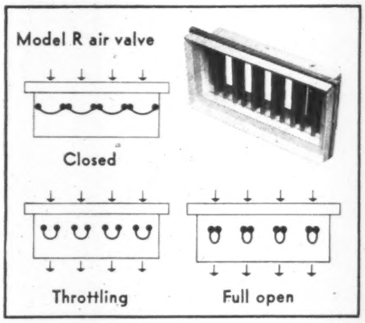

Model R air valve
Closed
Throttling
Full open

Fig. 1 — Motor-operated valves are widely used in double-duct systems for mixing of hot and cold air. Manually operated valves are used in branch ducts or take-offs to reduce velocity and/or balance the system.

Air Valves. Manual or motor-operated valves throttle air flow for: 1. reducing velocity in single- or double-duct systems; 2. controlling double-duct hot and cold air mixing; 3. balancing low velocity ducts or take-offs. Air valves cannot provide constant cfm delivery when there is variation in static pressure in the system.

Model F valves operate very quietly when handling high velocity inlet air. They can be mounted directly behind Uni-Flo diffusers when moderate noise level is permissible in the occupancy zone. When Model R valves are used to handle high velocity inlet air, acoustical lining is required downstream from the valve.

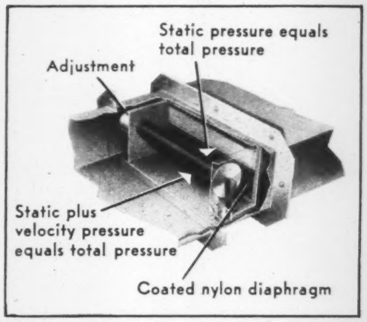

Static pressure equals total pressure
Adjustment
Static plus velocity pressure equals total pressure
Coated nylon diaphragm

Fig. 2 — SCR volume regulator maintains constant cfm delivery for inlet air pressure differences up to 6:1. No power source required, the regulator operating on as little as 0.50 inches static pressure.

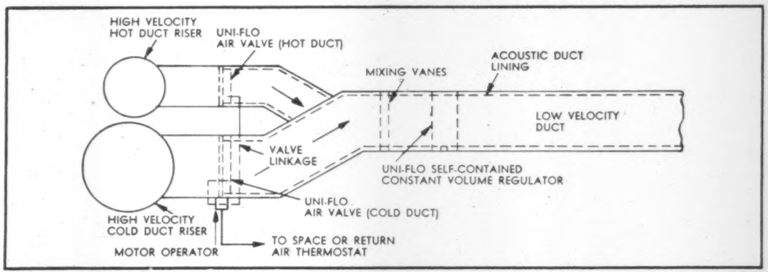

HIGH VELOCITY HOT DUCT RISER
UNI-FLO AIR VALVE (HOT DUCT)
MIXING VANES
ACOUSTIC DUCT LINING
LOW VELOCITY DUCT
VALVE LINKAGE
UNI-FLO SELF-CONTAINED CONSTANT VOLUME REGULATOR
UNI-FLO AIR VALVE (COLD DUCT)
HIGH VELOCITY COLD DUCT RISER
MOTOR OPERATOR
TO SPACE OR RETURN AIR THERMOSTAT

Fig. 4 — Double-duct system with motor-operated valves for hot and cold air mixing. SCR regulator maintains constant cfm delivery to the low velocity duct. NOTE: Model CV unit (Fig. 3) could be used instead of the two valves and SCR regulator.

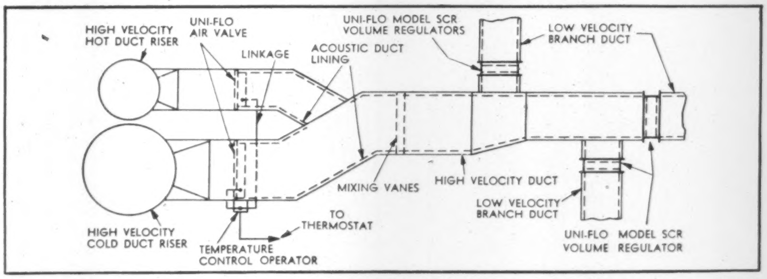

HIGH VELOCITY HOT DUCT RISER
UNI-FLO AIR VALVE
LINKAGE
ACOUSTIC DUCT LINING
UNI-FLO MODEL SCR VOLUME REGULATORS
LOW VELOCITY BRANCH DUCT
MIXING VANES
HIGH VELOCITY DUCT
LOW VELOCITY BRANCH DUCT
TO THERMOSTAT
HIGH VELOCITY COLD DUCT RISER
TEMPERATURE CONTROL OPERATOR
UNI-FLO MODEL SCR VOLUME REGULATOR

Fig. 5 — Double-duct high velocity system with Model R air valves controlling mixture of hot and cold air. Constant volume regulators in branch ducts make the system self-balancing.

Constant Volume Regulators. New Barber-Colman SCR constant volume regulators maintain constant cfm delivery regardless of static pressure changes in the system. Operation is illustrated in Figure 2. A static pressure increase or decrease above the diaphragm forces it downward or upward, controlling the open area of the baffle plate. Acoustic lining insures quiet operation.

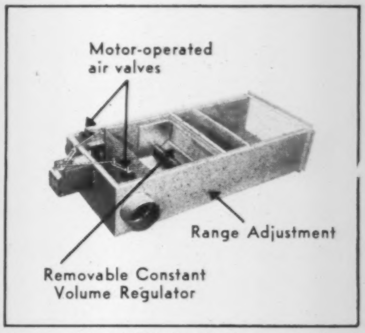

Motor-operated air valves
Range Adjustment
Removable Constant Volume Regulator

Fig. 3 — Model CV double-duct control unit combines two motor-operated valves (Fig. 1) and a constant volume regulator (Fig. 2) to provide accurate temperature control, velocity reduction, and constant cfm delivery.

SCR units greatly simplify design and stabilization. When they are used in branch ducts, the system becomes *self-balancing.* (Fig. 5)

Double-Duct Control Units. Another boon to designers and installers is the Barber-Colman Model CV Control (Fig. 3) — two motor-operated air valves and a constant volume regulator in one compact unit. Model CV accurately mixes hot and cold air and delivers constant cfm at reduced velocity. Acoustic lining provides quiet operation.

Send for new bulletin. Valuable high velocity system design data is contained in new Bulletin No. F6598-1 available upon request. Call your local Barber-Colman field office or write:

BARBER COLMAN ®

BARBER-COLMAN COMPANY
Dept. M, 1101 Rock Street, Rockford, Illinois

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Provides full information on a complete line of Y type and Basket type strainers.

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Available in all pressures in Cast Iron, Brass, Steel or Stainless Steel in sizes ranging from ¼" through 16".

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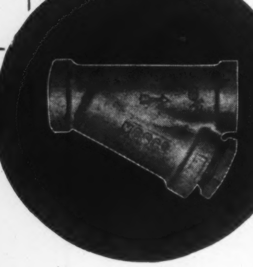

EQUIPMENT DEVELOPMENTS

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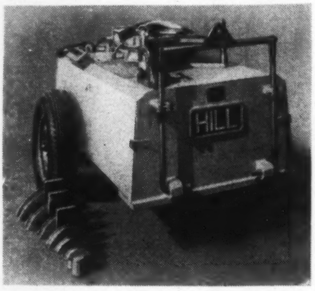
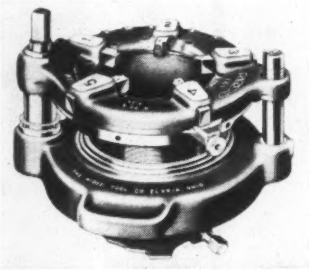


Pipe Bender . . .

. . . designed for applications in metalworking plants, factory maintenance departments, electrical and air conditioning installations—*Walter P. Hill, Inc., Dept. HPAC,* 22183 *Telegraph Rd., Detroit* 19.

Portable hydraulic bending and pipe fabricating machine weighs 2500 lb mounted on wheels. Machine has built-in 20 ton ram-type hydraulic bending machine powered by self-contained 1200 rpm, 2000 psi, 5 gpm hydraulic pump and tank unit. Bending dies for ½, ¾, 1, 1¼, 1½, and 2½ in. diam pipe furnished with standard pipe vice. Pump driven by 220/240 volt, 5 hp electric motor with plug attachment or optional 5 hp gas engine.



Pipe Treader . . .

. . . designed for jamproof operation for safe threading with power drive —*Ridge Tool Co., Dept. HPAC, Clark St., Elyria, Ohio.*

"Ridgid 161" pipe threader threads four sizes; 4, 4½, 5, and 6 in. pipe or conduit with single set of cam activiated dies. Two spring knobs lock dies at clearly marked setting. Designed for power drive or manual operation, unit is regularly equipped with ratchet handle.

THE MARK OF QUALITY

BARBER
COLMAN

Electrionic Control APPLICATIONS

NOW, BETTER CONTROL OF NEW FACE AND BYPASS UNIT VENTILATORS with modern electrionic controls

New control package from Barber-Colman enables you to take maximum advantage of the new face and bypass unit ventilators. Applicable to both year-round air conditioning and heating-only units.

SIMPLIFIED CONTROL PACKAGE

The new system consists of a motor operator, a dual element controller, plus an automatic change-over thermostat on year-round systems. Outdoor reset of supply water temperature and design of unit ventilator eliminate need for supply valve. Unit controls use electric power provided at fan motor. Factory installation may be specified.

UNIT-MOUNTED THERMOSTAT

Dual-element thermostat mounted within the unit ventilator eliminates wall-placement problems, chalk dust and dirt problems, and tampering by unauthorized personnel. Discharge temperature maintained within comfortable limits at all times through anticipating action of room and discharge controller.

POSITIVE POSITIONING MOTOR OPERATOR

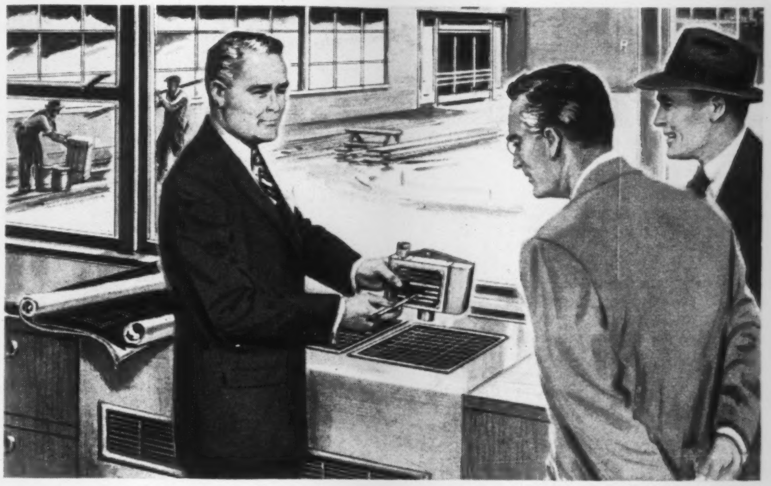
Positive-positioning provides full power to position outdoor and return air and face and bypass dampers as required by room air controller. Motor position is determined by electric feed-back circuit and is independent of connected load imposed by dampers and linkage. Spring return insures positive closing of outdoor air damper on fan shut-down.

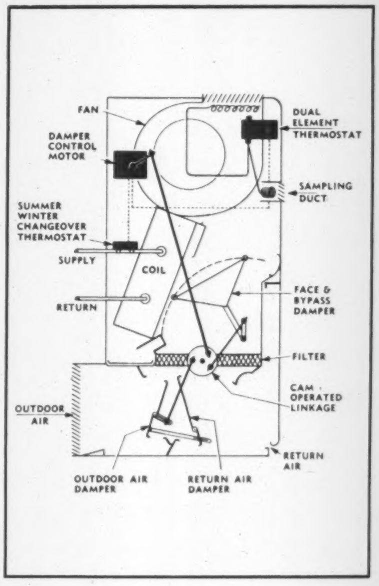
CHANGE-OVER THERMOSTAT

Change-over from heating to cooling is automatic. Thermostat senses hot or chilled water supply medium and activates control system accordingly.

APPLICATION FLEXIBILITY

Adjustable minimum outdoor air meets all codes. Night control optional.





BETTER CONTROL . . . ELECTRIONICALLY

No increase in cost over other control systems — substantially lower costs reported on many installations. Controls and unit ventilator powered from same source.

BACKED BY BARBER-COLMAN

Local Barber-Colman comfort engineers assume complete responsibility for adjustment and performance of controls wherever ventilators are installed, even when controls are factory-mounted by the unit ventilator manufacturer.

COMPARE AND SPECIFY

Bulletin F 8527 gives full details, including control sequence, possible variations, and how to specify. Call your Barber-Colman comfort engineer or clip this ad to your letterhead and mail direct to Barber-Colman Company.

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Automatic Controls • Air Distribution Products • Small Motors • Industrial Instruments • Aircraft Controls • Electrical Components • Overdoors and Operators • Molded Products • Metal Cutting Tools • Machine Tools • Textile Machinery

Radiant Ceiling News

With Burgess-Manning Ceilings — Your Building Is Better — Your Building Budget No Bigger

Radiant Acoustical Ceilings in New Porter Building Provide Uniform Year-Round Temperature

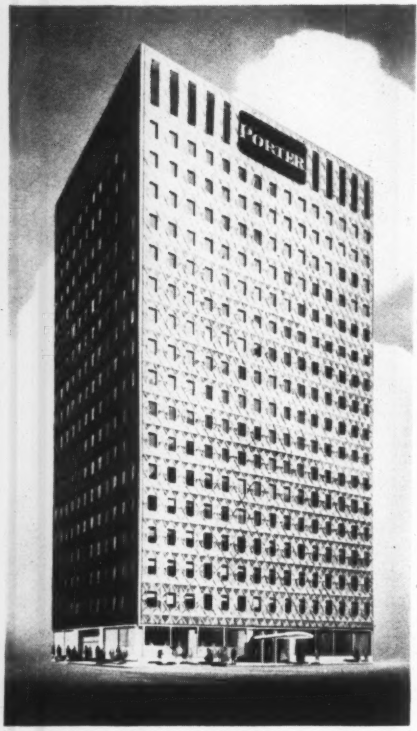
One of the most attractive of the many outstanding features of the new Porter Building, located in the heart of Pittsburgh's "Golden Triangle," is the uniform, year-round temperatures maintained throughout the building by the Burgess-Manning Radiant Heating, Cooling and Acoustical Ceilings. Each office has its own thermostatic control and the ceiling automatically warms or cools the room, depending on the season, to maintain the desired temperature.

The radiant energy from the ceiling heats only the occupants, floor and objects in the room. It does not raise the air temperature except as the air is warmed by the floor or the objects in the room, so there are no air currents or drafts; the room temperatures are uniform from floor to ceiling and throughout the room. The down-drafts in front of a window, or the up-drafts above a radiator, common in convection heated rooms, are not found in radiant heated rooms.

In the warm weather, chilled water is circulated through the coils of the ceiling, and the panels will absorb excessive heat from occupants and furniture in the room. Again there are no drafts such as the chilled air currents emitted from conventional air conditioners.

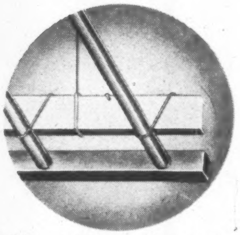
The architects, Harrison and Abramovitz, and engineers, Jaros, Baum and Bolles, made the most of the possibilities offered by the Burgess-Manning Radiant Acoustical Ceiling. The floor area of the Porter Building is uncluttered by radiators—the walls contain a minimum of ducts required with the more conventional comfort conditioning devices. Less ceiling thickness, because only ventilating ducts are required—mean lower building height and lower cost for the same number of stories.

The modern Porter Building, in addition to radiant heating and cooling, has an electronic precipitator that will remove dust, pollen and smoke from the ventilating air. Half inch solar glass windows absorb solar heat and reduce outside noise. The Burgess-Manning Radiant Acoustical Ceiling absorbs interior noises.

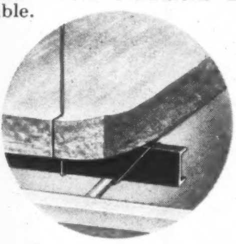


Radiant Acoustical Ceiling Cuts Down Building Weight

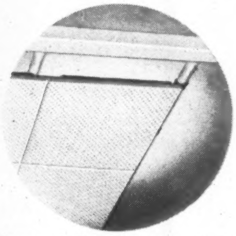
In addition to other economies in first cost, the Burgess-Manning Radiant Acoustical Ceiling, because of its reduction in weight over a plaster ceiling, permits the use of lighter structures. The weight of the aluminum panels of the radiant heating and acoustical ceiling, plus the water filled grid, is only 25% of the weight of a plaster ceiling.



The illustration above shows the construction of the Burgess-Manning Radiant Acoustical Ceiling. A conventional 1½″ channel suspension grid supports a water circulating coil which consists of ½″ laterals welded into square headers. A sinuous type coil can be used where conditions make it desirable.



The sound absorbing insulating blanket is laid on top of the suspension.



Perforated aluminum radiating panels are attached directly to the water circulating coil.

The distance from the face of the aluminum panel to the top of the suspension member is 3⅛″, a substantial saving in space over the ventilating ducts, etc., required for some other systems.

Write for descriptive Burgess-Manning Catalog No. 138-2H

3 Heating Cooling Acoustical

BURGESS-MANNING COMPANY
Architectural Products Division
5970 Northwest Highway, Chicago 31, Ill.

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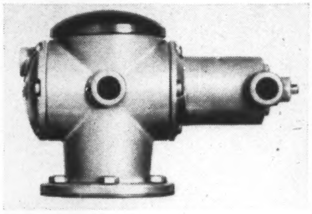
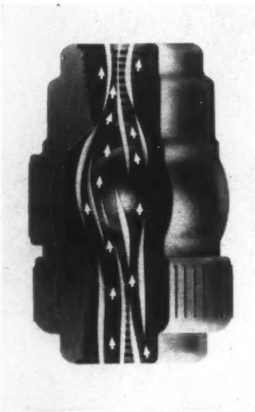


Valve Positioner . . .

. . .developed to match or exceed speed, sensitivity of modern pneumatic controllers—*Conoflow Corp., Dept. HPAC,* 2100 *Arch St., Philadelphia* 3.

"Model J" top mounted integral valve positioner said to combine force-balance design with new pilot-operated relay valve. Suitable for use on cylinder and diaphragm type actuators. Capable of infinite number of stroke lengths to 8 in. in combination of control forms through variety of models. Responds to signal changes as low as 0.001 psi. Vibrationproof, weatherproof with moving parts protected by anodized aluminum housing.

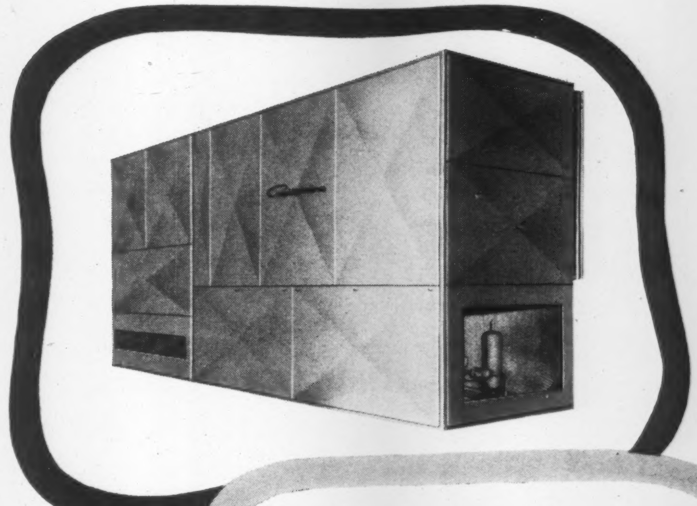


Plastic Check Valve . . .

. . .with separate seats for high and low pressure—*Chemtrol Co., Dept. HPAC,* 10872 *Stanford Ave., Lynwood, Calif.*

"Chem-Check" valve available in PVC types I and II, kralastic, "Penton" and Profax." Mechanical features: full-flow low pressure drop; built-in vibration damper; standard connectors — thread, socket, flanged, victaulic grooved. Available in pipe sizes ½ to 2 in.

For Unmatched Flexibility
National-U.S.
Central Station
Packaged Air Conditioning



7½-60 h.p.
water-cooled
or
evaporative condenser

Water-cooled or evaporative condenser models in nine sizes from 7½ to 60 h.p. provide a selection from which a combination can be arranged to fit any particular situation. Each model is available in different arrangements, matched to meet any space requirements.

All units are completely engineered and packaged—require only power, ductwork and water supply connections for quick installation. And, all are factory pre-tested to minimize performance testing time.

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HEATING AND AIR CONDITIONING DIVISION
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Sixty years in thermal hydronics

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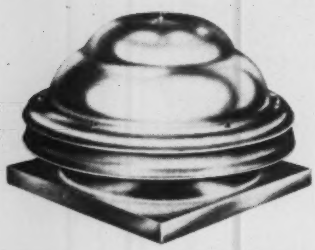
Continued



Power Roof Ventilator . . .

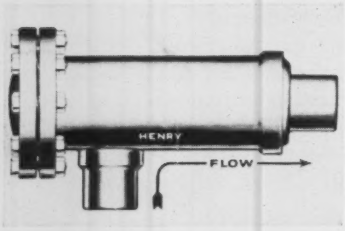
. . .designed to conform more closely to climatic conditions, architectural requirements—*Carnes Corp., Dept. HPAC, Verona, Wis.*

Motor covers of ventilator separated from fan hoods with air space. Air space said to result in negligible chamber resonance, will nullify mechanical sound pattern by air flow. Motors with sealed bearings have been cushioned.

Roof Ventilator . . .

. . .designed on aerodynamic principles to utilize force of internal thermal currents, external air currents —*Colt Ventilation of America, Inc., Dept. HPAC,* 4652 *Hollywood Blvd., Los Angeles* 27.

"Model O/SR 2046" has large, friction free throat, maneuverable flaps, airfoil sides. Constructed in anti-corrosive hardened aluminum with integral base for rigidity and weathering or in new type throat sleeve for connection to contractor's base.



Filter-Driers . . .

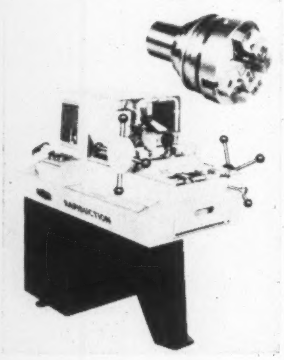
. . .in new line—*Henry Valve Co., Dept. HPAC,* 3215 *North Ave., Melrose Park, Ill.*

Multiple cartridge type angle filter-driers have drying, flow capacity of up to 100 tons. Available in 1⅛ to 2⅛ in. OD connection sizes. Units require no bypass, have low pressure drop.

Adjustable Sheave . . .

. . .in new design allowing adjustment through single adjusting screw and hollow lock screw—*Allis-Chalmers Mfg. Co., Dept. HPAC,* 1171 *S. 70th St., Milwaukee* 1.

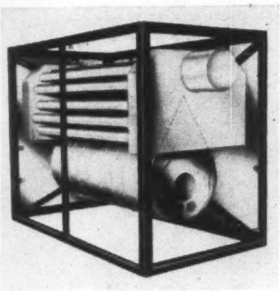
"Adjustex" sheave available for A, B, C section belts in two, three and four-groove construction. One new diameter for C section belts available: 7.5/9.7 in. pitch diam. Design capacities to 75 hp covered by 33 sizes. With patented interdigitated lug disc and adjusting screw relative position between stationary and movable discs said to be positively maintained at pitch diameters without disc to main sleeve set screws.



Pipe Threading Machines

. . . equipped with rotary, tangential die-head with high speed steel, tangential threading chasers—*Oster Mfg. Co., Dept. HPAC, E. 189th and Nickel Palte R. R., Wickliffe, Ohio.*

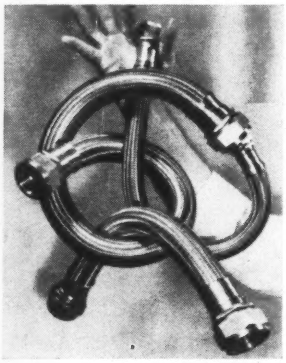
"No. 791-AT" has capacity covering all sizes of bolts or rods from ¼ to 1½ in. and pipe or nipples from ⅛ to 1¼ in. "No. 792-AT" threads, bolts, or rods for ¼ to 2 in. and pipe or nipples from ⅛ to 2 in. Die-head is semi-automatic in action with tripping and re-setting device which can be set to trip die-head automatically when thread has reached desired length and reset to same size for duplicate threads. Drive motor is 3 hp, 1800 rpm with four speed transmission.



Warm Air Furnace . . .

. . .in new line with capacities to 2,500,000 Btu per hr—*Chicago Steel Furnace Co., Dept. HPAC,* 9326 *S. Anthony Ave., Chicago* 17.

"Maxi-therm" line includes horizontal furnaces, duct heaters, flow, and counterflow units. Type 442 stainless steel used in construction. Two-pass combustion chamber has ribbed tear drop design in 12 gage steel. Features cited include: one-piece frame; tube and transfer box access plate; polished radiant shield; two-pass aluminized steel heat exchanger.



Flexible Hose . . .

. . . developed for high temperature and corrosion resistant industrial applications—*Titeflex, Inc., Dept. HPAC, Hendee St., Springfield, Mass.*

"Springfield 400" plastic hose said to have excellent flow characteristics because of low convolutions in inner tube. Hose constructed through process utilizing plastic and glass fiber tape. Available in diameters ¾ to 2 in. with minimum bend radius of 3-1/3 times equivalent tube size. Hose has temperature range of −65 to 400 F.

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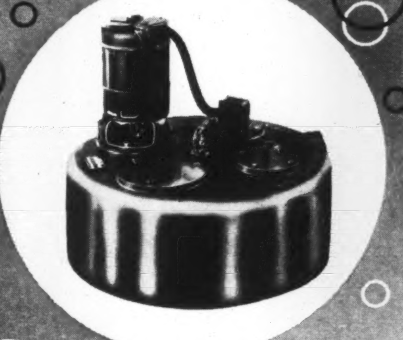
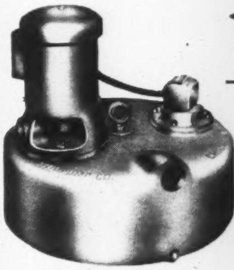
LOW RETURN CONDENSATE PUMP



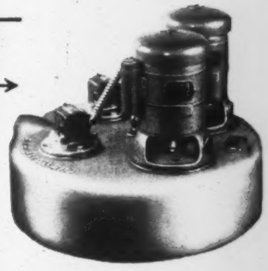
NEW
26 GALLON RECEIVER
for capacities to
15,000 Sq. Ft. E.D.R.

Now Available with 26 GALLON CAST IRON RECEIVER



21″ O.D. Receiver
for single units

25½″ O.D.
Receiver for
single or
duplex units



LOW SPEED — 1750 RPM for long life

Unit Number	Max. Sq. Ft. Direct Radiation	Disch. Press. In Lbs. At Pump	GPM Radiation Will Condense	Capacity of Pump in GPM	Motor H.P.	Return Inlet in Inches	Pump Discharge in Inches	Diameter and Capacity of Receiver	Height of Return to Centerline
TVC-19	750	20	.38	1.5	¼	2	1	21″ -10 Gal.	6⅞″
TVC-23	1000	20	.5	1.5	¼	2	1	21″ -10 Gal.	6⅞″
TVC-29	2000	20	1.0	3.0	¼	2	1	21″ -10 Gal.	6⅞″
TVC-35	4000	20	2.0	6.0	¼	2	1	21″ -10 Gal.	6⅞″
TVC-41	6000	20	3.0	9.0	⅓	2	1	21″ -10 Gal.	6⅞″
TVC-47	8000	20	4.0	12.0	½	2	1	25½″-15 Gal.	7³⁄₁₆″
TVC-52	10000	20	5.0	15.0	¾	2	1	25½″-15 Gal.	7³⁄₁₆″
TVC-54	15000	10	7.5	22.5	½	3	1¼	25½″-26 Gal.	10½″
TVC-55	15000	20	7.5	22.5	¾	3	1¼	25½″-26 Gal.	10½″
TVC-56	15000	30	7.5	22.5	1	3	1¼	25½″-26 Gal.	10½″
TVC-57	15000	40	7.5	22.5	1½	3	1¼	25½″-26 Gal.	10½″

With these weil TVC Pumps, radiation may be placed as low in the building as desired. Underground gravity return lines are eliminated and overhead discharge lines used. The built-in durability, ease of installation, low cost and efficient operation of the TVC Pump warrants its selection for new installations or replacements.

Now available in Jobbers' Stocks

weil PUMP COMPANY

Send for Bulletin TVC-300

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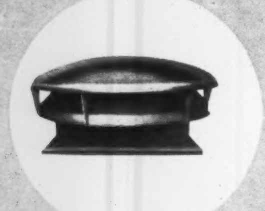
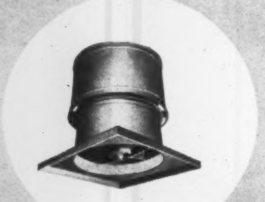
ACCEPTED Allen ROOF VENTILATION

Whatever your ventilating needs, be sure to see how Allen equipment can meet your requirements efficiently and economically.



NEW "I-LINE" for EYE APPEAL

The new "I-Line" provides an attractive low contour, assuring maximum capacity or efficiency with the minimum over-all height.

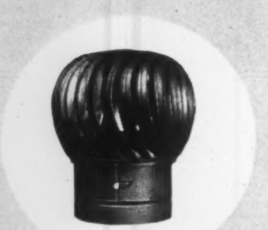


POWERFUL "VD" for HIGH VELOCITY

By moving a large volume of air at high velocity, this Vertical Discharge fan keeps fumes from sifting back into building.

Allen

. . . is prepared to investigate ventilating problems and plan systems for the efficient removal of heat, fumes, vapor or dust.



WIND-DRIVEN TURBINES

Three types of Allen turbines take full advantage of the economy of natural air movement.

EXHAUST FANS

Remote drive Staxauster is designed to handle corrosive fumes, and/or high temperature air.

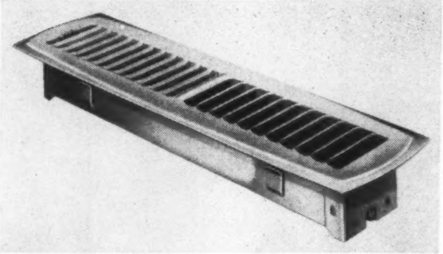
THE ALLEN LINE

Write today for catalog that gives specifications and performance data on these and other units in the Allen ventilator line.

ALLEN ENGINEERED VENTILATION

ALLEN COOLER & VENTILATOR, INC.
ROCHESTER, MICH.

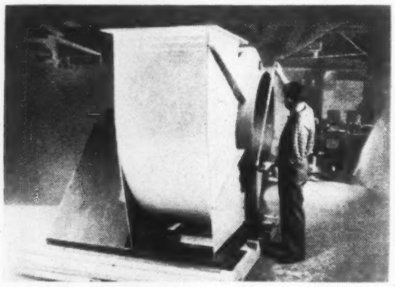
Roof Ventilators for Every Commercial and Industrial Need
REPRESENTATIVES IN PRINCIPAL CITIES



Floor Diffuser . . .

. . . with dial operator and side expansion tabs—*Air Control Products, Inc., Dept. HPAC, Coopersville, Mich.*

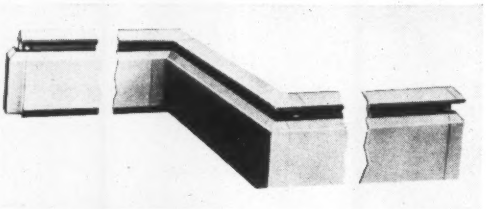
"No. 150" floor diffuser has double, opposed-action valve for use on 4 in. widths and single valve on 2¼ in. widths. Vanes adjustable to provide desired air pattern. Operator may be locked to avoid tampering.



Plastic Fan . . .

. . . designed for applications requiring high resistance to corrosion—*Heil Process Equipment Corp., Dept. HPAC,* 12901 *Elmwood Ave., Cleveland* 11.

All exposed parts are of glass reinforced plastic; no painting required on surface, inside or out. "Ridgon No. 36" fan will handle 27,500 cfm of air. Company's plastic fans designed to handle up to 35,000 cfm.



Electric Baseboard . . .

. . . in 2, 5, 8 ft lengths to be flush-mounted or recessed against studding—*Ilg Electric Ventilating Co., Dept. HPAC,* 2850 *N. Pulaski Rd., Chicago* 41.

Installation in four steps: back panel containing heating element screwed or nailed into studs; power connected to splice box; cover panel snapped in place; end caps, corner pieces snapped on. Baseboard recommended by manufacturer for commercial and small industrial installations.

(Continued on page 314*)*

We Point with Pride to. . . . 25

As we enter our twenty fifth
anniversary year, we are proud...
proud not for ourselves,
but for the quarter of a century
of trust, patronage
and loyal support from you,
the Wholesalers, Manufacturers,
Service Engineers,
Contractors, Architects and
Engineers in the
Air Conditioning and
Refrigeration Industry...
without whom, this
would not be possible.

SPORLAN VALVE COMPANY
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Our 25th Anniversary . . . 1934-1959

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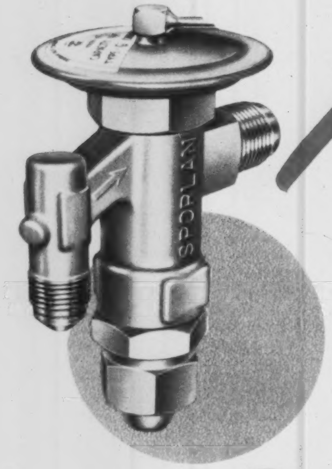
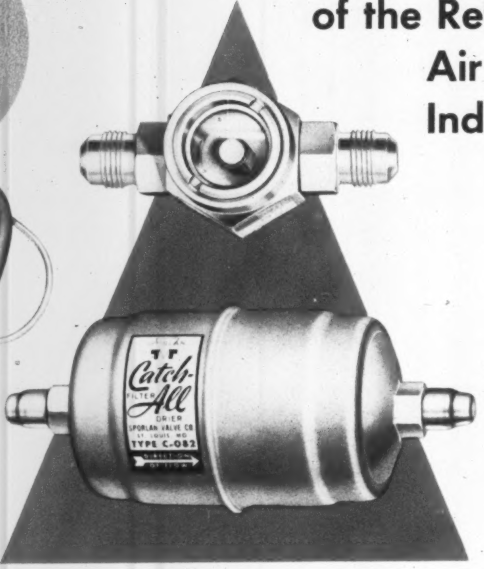
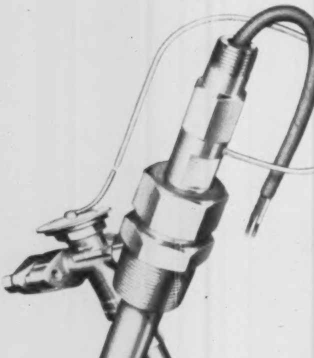
will develop and produce only

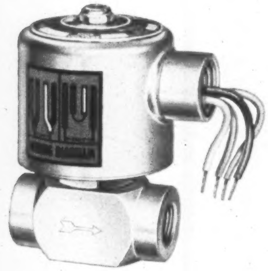
PEAK PERFORMANCE PRODUCTS

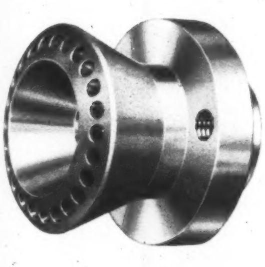
to fulfill the needs of the Refrigeration and Air Conditioning Industry











Sporlan will continue to expand and perfect its combination of right down the line Peak Performance Products . . . the Catch-All filter-dryer, the See•All moisture and liquid indicator, Solenoid Valves, Thermostatic Expansion Valves, Refrigerant Distributors and the Level-Master control for any commercial or industrial Air Conditioning or Refrigeration job.

We are expecting you at BOOTH 52

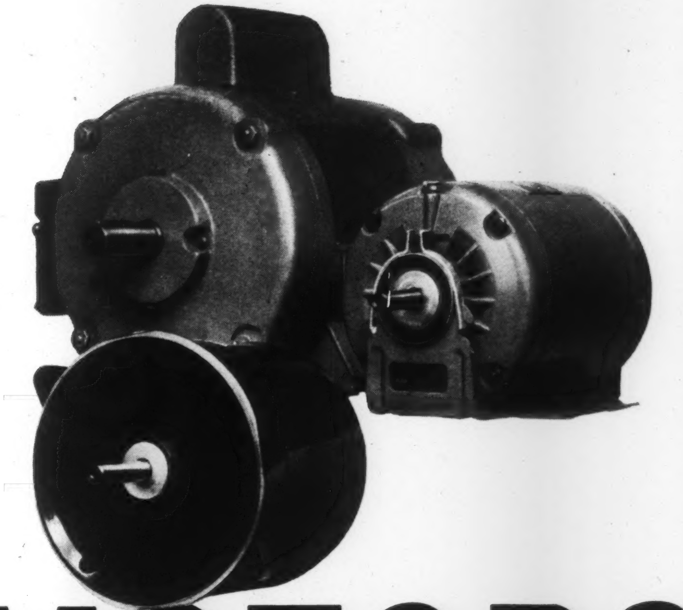
14TH INTERNATIONAL
HEATING and
AIR CONDITIONING
EXPOSITION
JANUARY 26-29, 1959
CONVENTION HALL
PHILADELPHIA, PA.

*Buy Sporlan
Right Down the Line and
get Peak Performance
throughout!*

SPORLAN VALVE COMPANY
7525 SUSSEX AVE. ST. LOUIS 17, MO.
EXPORT DEPT. 85 BROAD STREET, NEW YORK 4, N. Y.

LITHO IN U.S.A.

Our 25th Anniversary.....1934-1959



MOTORS

performance-proved by industry's leaders

FOR
OIL BURNERS
BLOWERS
PUMPS
COMPRESSORS
UNIT HEATERS
AIR CONDITIONERS
COOLING TOWERS
VENTILATORS

SEE THEM at our exhibit, Booth 30
14th International Heating and
Air Conditioning Exposition
January 26-29, Philadelphia, Pa.

Leading names in our nation's industries use Marathon Electric Motors to produce quality products. A wide range of standard Fractional and Integral HP Motors are available, as well as engineering services to tailor make motors to your requirements.
Send today for Bulletins SB-179 and SB-180.

MARATHON ELECTRIC
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FRACTIONAL MOTORS

MOTORS AND GENERATORS—THAT'S OUR BUSINESS

Motors from 1/20 to 3500 H.P. **Generators from 1/2 KW to 2500 KW**

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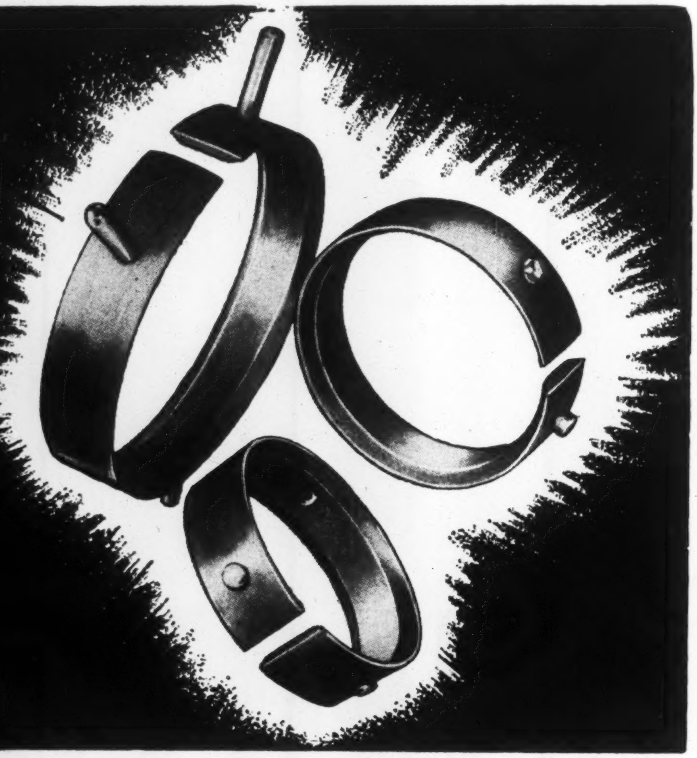
Home Office and Factory, Wausau, Wis. • Factories at Erie, Pa., and Earlville, Ill. • Sales Offices in Principal Cities

ROBVON

BACKING RINGS

APPROVED FOR WELDED PIPE, VALVES, AND FITTING JOINTS



- V Nub diameter automatically sets welding for root pass
- V Forms perfect welded joint eliminating slag and icicles
- V Allows complete penetration and fusion
- V Eliminates the necessity of tack welding
- V Radiographs a perfect certified weld

Available in Carbon Steel, Wrought Iron, Chrome Alloys, Stainless Steel, Aluminum and Copper

TYPE CCC Designed for quick easy alignment of pipe where the variation in inside diameters is relatively great. Chamfered NUBS allow close tolerance fit-up and CLEAN STRIKE OFF. The ROBVON NUB conforms to the diameter of weld rod. Robvon rings are beveled to assure non-restricted fluid flow.

TYPE CC Designed to allow quick easy alignment of pipe where the inside diameters are slightly out of round. The welder has the choice of "STRIKING OFF" the NUBS or leaving them intact to be melted into the weld mass of the first root pass.

TYPE C Designed for precise tolerance fit-up. Type "C" NUBS conform to the diameter of the weld root. The NUBS melt with the metal to give complete penetration and fusion.

WRITE FOR FULL INFORMATION

ROBVON ALSO MANUFACTURES MACHINED RINGS TO CUSTOMER'S SPECIFICATIONS. ALL FABRICATED SOLID MACHINED RINGS X-RAYED.

ROBVON
BACKING RING COMPANY

675 Garden Street **Elizabeth, N. J.**

for
QUALITY
WHEATLAND-59

Men who know pipe point to WHEATLAND

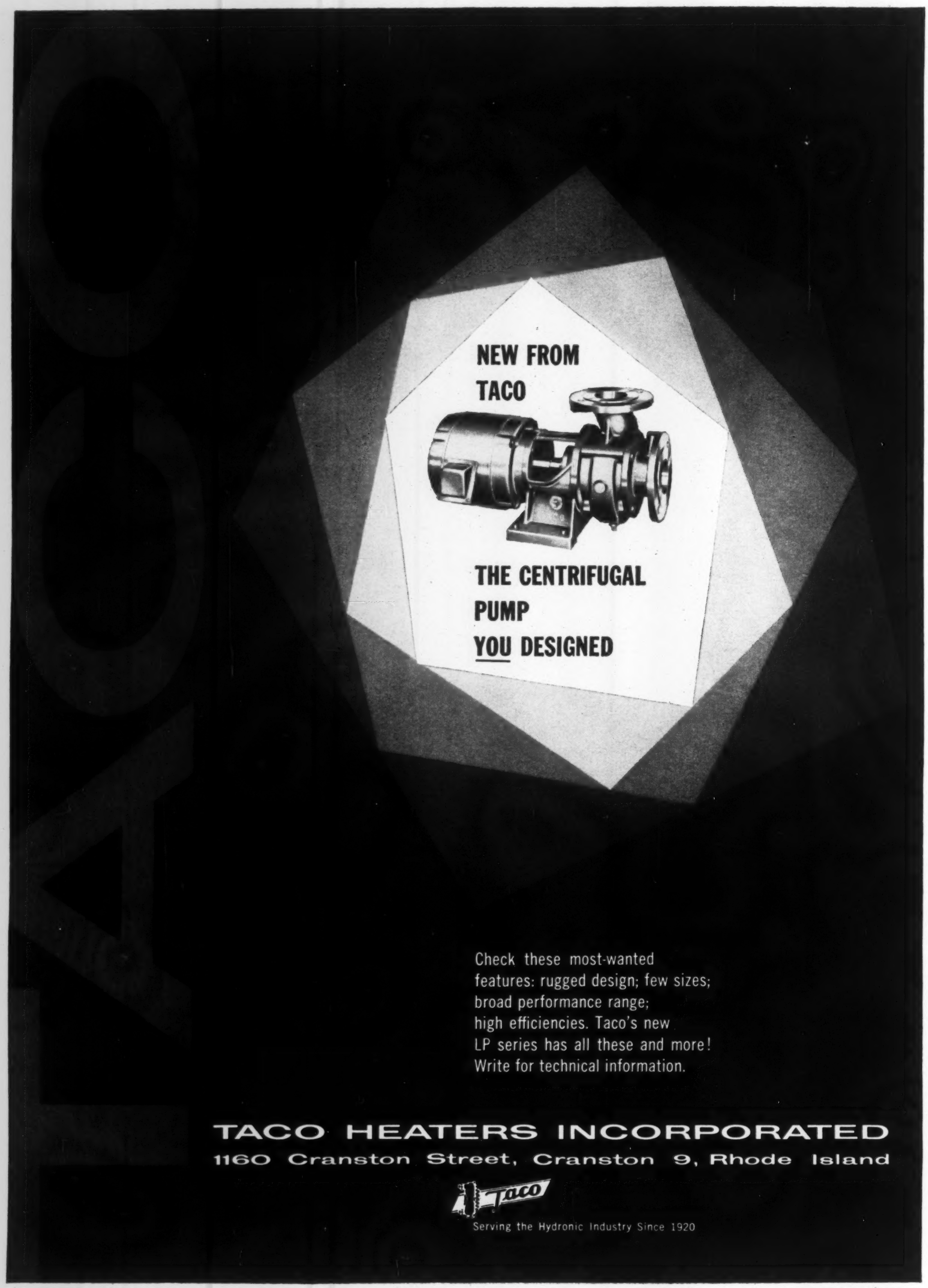
Steel pipe of unvarying high quality—Wheatland Steel Pipe—is singled out by more knowing men every day. They *know* that the "pipe with the yearmark" is long-lasting and easy-working on any application . . . that it's backed by Wheatland's sincere desire for complete customer satisfaction. Yes, for quality and all-around service, you can point to Wheatland with confidence!

...pipe with the yearmark!

For Black or Galvanized Pipe, contact your distributor or

WHEATLAND TUBE CO.

BANKERS SECURITIES BUILDING, PHILA. 7, PA. • MILLS: WHEATLAND, PA. • DELAIR, N. J.



NEW FROM TACO

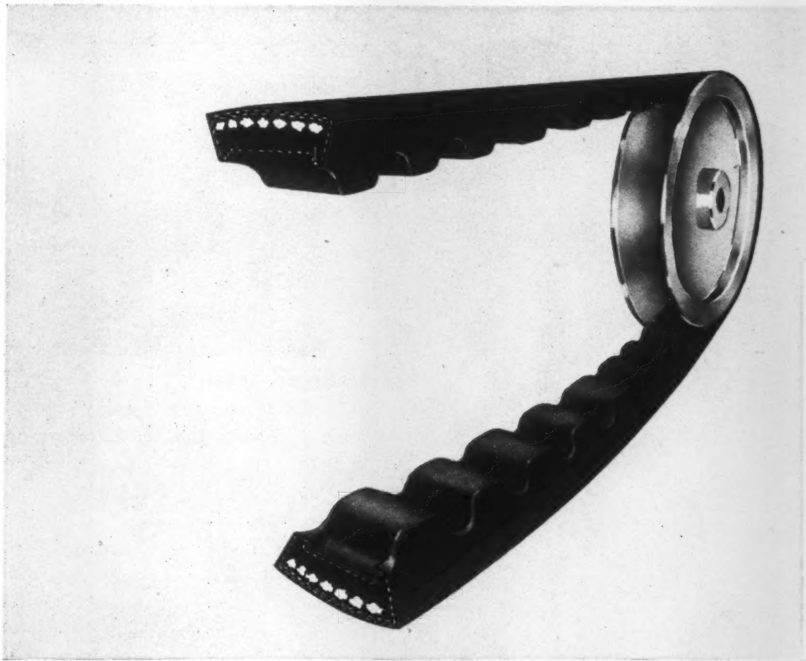
THE CENTRIFUGAL PUMP YOU DESIGNED

Check these most-wanted features: rugged design; few sizes; broad performance range; high efficiencies. Taco's new LP series has all these and more! Write for technical information.

TACO HEATERS INCORPORATED

1160 Cranston Street, Cranston 9, Rhode Island

Serving the Hydronic Industry Since 1920



This New R/M Cog V-Belt Design Outlasts others as much as 8 to 1

Designers of heating and cooling equipment welcome this new cog belt . . . *wherever* belt flexibility, ruggedness, small pulleys, and *extremely quiet* vibration-free running are important factors. R/M introduces the new CX Cog V-Belt—*the first and only fully molded, fully jacketed cog belt* made for original equipment manufacturers. Extensive tests have proved it outperforms, outlasts other makes of belts as much as 8 to 1. Fully molded and full fabric cover prevents flex-cracking, maintains effective length *without* stretch to assure smoother, cooler, *quieter* running than ever before possible.

VIBRATION PROBLEMS—R/M engineering makes possible other improved V-belt designs to meet a variety of drive requirements. For example, R/M Full-Molded FHP V-Belts eliminate troublesome vibration and noise problems on air conditioners and similar units. An exclusive molding process positions *and controls* every belt part to assure balanced belt power delivery without whipping or slapping. It's the *one* V-belt fully engineered to assure vibration-free performance for every light duty drive application. For heavy industrial multiple belt units, Condor V-Belts assure *more* grip, *less* slip . . . longer, trouble-free belt service.

R/M POLY-V® DRIVE—For heavy duty power transmission requirements, *no* drive delivers as *much* power in as *little* space as R/M's patented Poly-V* Drive employing a *single*, parallel V-ribbed Poly-V belt. Write for Bulletins.

*Poly-V is a registered Raybestos-Manhattan trademark.

R/M
Expansion Joints and Condor Flexible Rubber Pipe

For air conditioning blowers, pumps, compressors and other heating and ventilating units, R/M Rubber Expansion Joints are precision engineered to overcome expansion stress, insulate against the transmission of destructive vibration and disturbing noises. Advanced engineering features and highest standards of production quality assure these additional advantages:

- **Maximum Resistance to Shock**
- **Greater Recovery from Movement**
- **No Embrittlement with Age**
- **Require No Gaskets**
- **Abrasion and Corrosion Resistant**

On pipe lines subject to noise and vibration, Condor Flexible Rubber Pipe outlasts iron or steel . . . permits easy installation and eliminates leaky joints at bends. Write for Bulletin M685.

RM 935

BELTS • HOSE • ROLL COVERINGS • TANK LININGS • INDUSTRIAL RUBBER SPECIALTIES

MANHATTAN RUBBER DIVISION — PASSAIC, NEW JERSEY

RAYBESTOS-MANHATTAN, INC.

Other R/M products: Abrasive and Diamond Wheels • Brake Blocks and Linings • Clutch Facings • Asbestos Textiles • Mechanical Packings • Engineered Plastics • Sintered Metal Products • Industrial Adhesives • Laundry Pads and Covers • Bowling Balls

Cut Steel or Cast Iron Pipe up to 12"
EASIER and FASTER

WITH THE NEW REED

HINGED 4-WHEEL
PIPE CUTTER

- Closed Frame Construction assures complete rigidity with less weight.
- 4-Wheel design needs minimum swing of handle.
- 4-Point pipe guide aligns cutter for perfect tracking of wheels and a right angle cut.
- Quickly interchangeable wheels for steel or cast iron.
- Needs only 3" space to pass under 12" pipe.

For ditch work or similar close-quarter operations these new Reed Cutters are practically indispensable and fully justify replacing whatever cutting equipment you are now using.

You can, for example, cut 8" steel pipe in less than five minutes, and cast iron pipe even faster.

Available in five sizes for steel or cast iron pipe from 1" to 12".

FOR FAST TURNING IN TIGHT SPOTS—
USE THE IMPROVED REED CHAIN WRENCH

Handles range from 10" to 60" in length.

You can tighten up or "back off" without taking wrench from pipe.

These improved chain wrenches will do anything an ordinary pipe wrench will do . . . and do it easier, better and faster. Ideal for ditches or tight corners.

Grip securely with no play, yet they have a ratchet-like action.

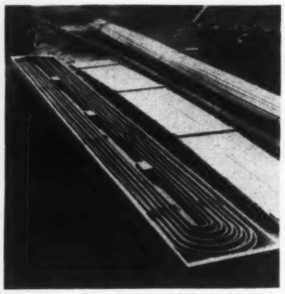
REED

Unconditionally guaranteed to be the most efficient tools you have ever used. See your jobber or write for literature.

REED MANUFACTURING COMPANY
ERIE • PENNSYLVANIA

EQUIPMENT DEVELOPMENTS

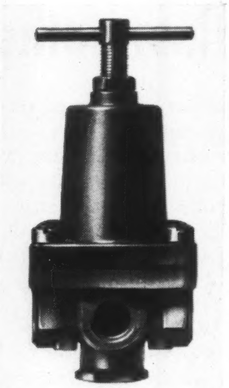
Continued



U-Bend Tube . . .

. . . manufactured in choice of uniform gage with thickened centers or with thickened ends—*Chase Brass & Copper Co., Dept. HPAC, 236 Grand St., Waterbury 20, Conn.*

U-bend tube is bent, trimmed, hydrostatically tested by manufacturer prior to shipment. Standard U-bend tooling will accommodate straight lengths to 75 ft in gages of 0.049, 0.065, 0.083, and 0.109 in. in variety of diameters and radii.



Air Pressure Regulator . . .

. . . developed to give high flow capacity and accuracy—*Watts Regulator Co., Industrial Div., Dept. HPAC, 10 Embankment Rd., Lawrence, Mass.*

"Series 112" regulator constructed of die-cast zinc with internal parts of brass, diaphragm and disc oil resistant. Available only in 1/4 in. size. "Series 113" identical except for addition of self-relieving feature to prevent pressure buildup in low pressure system, permitting downward pressure adjustment without bleeding line.

ACCO
for Better Values

R-P&C VALVES

THE COMPLETE LINE
—DESIGNED FOR DEPENDABILITY

125 S
200 OWG
6
P&C CO
ELEC
IRON

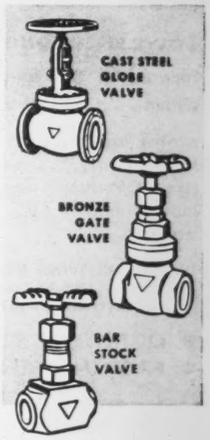
Created by R-P&C—made and sold exclusively by R-P&C...Electric Furnace Iron Valves

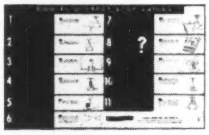
Electric furnace iron—introduced exclusively in R-P&C Valves—provides a high quality cast iron that meets the exacting requirements for pressure castings. Melted and refined under closest metallurgical supervision, R-P&C Electric Iron has physical properties *far exceeding the minimum standards* to which they must conform. It has a balanced chemical composition and a tough, dense body structure; and, it is more resistant to corrosion. All cast iron parts of R-P&C Valves are made of this Electric Furnace Iron.

Shown above is **Fig. 625**, a general service valve which is particularly applicable where full, unobstructed flow is desired. This type, available in bronze-trimmed or all-iron style, either flanged or screwed, is made in fifteen sizes, from 2″ to 24″—and is typical of the better values offered by the entire line of R-P&C Electric Iron Valves.

The R-P&C Line is Complete

The R-P&C line embraces gate, globe, angle and check valves in bronze, electric furnace iron and cast steel, and forged steel; all in a wide range of sizes, styles and pressure classes. Also, R-P&C offers specialties such as Lubrotite gate valves, bar stock valves, asbestos-packed cocks, cast steel fittings and pressure-seal cast steel valves. Order through your nearby R-P&C Distributor. For complete catalog, write our Reading office.





FREE WALL CHART
"How to Protect Your Valves"
Installation pointers, operating tips, clues to longer valve life. They are all on this 22″ x 17″ wall chart. Write for your free copy.

R-P & C VALVE DIVISION
AMERICAN CHAIN & CABLE

Reading, Pa., Atlanta, Boston, Chicago, Denver, Detroit, Houston, New York, Philadelphia, Pittsburgh, San Francisco, Bridgeport, Conn.

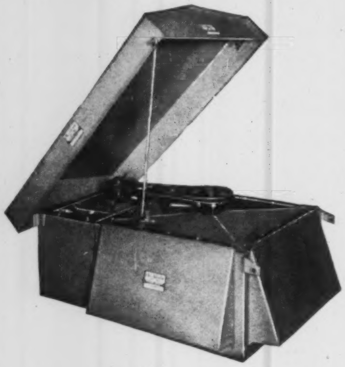
ACCO

AirMpeler

LO-BOY

CENTRIFUGAL
ROOF EXHAUSTERS

Enhance the Beauty of Building Skylines



Pats.
Pend.

Lowest Silhouette Design

Forward or Backward Curve Wheel Within . . . . or Out of Scroll Housing

Motor mounting on side of structure support . . . out of line of air stream reduces height of Lo-Boy models nearly 50% of older designs.

LOW WIND RESISTANCE
SIZES 10"-72" 600-47,000
CERTIFIED C.F.M. RATINGS

- QUALITY
- BEAUTY
- PROVEN PERFORMANCE

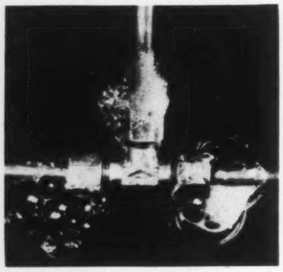
See Sweet's File 20c/Amm or Write for bulletin HA-100 58

AMMERMAN CO., INC.

110 North Second St.
Minneapolis 1, Minnesota
MEMBER OF THE AIR MOVING & CONDITIONING ASSN.

EQUIPMENT DEVELOPMENTS

Continued



Leak Detectors . . .

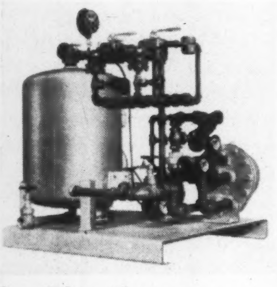
. . . for use with any system or equipment that can be leak-tested under gas or air pressure—*Winston Products Co., Dept. HPAC, Box* 3332, *Charlotte, N. C.*

Chemical solution developed specifically for testing lines, cylinders, tanks. Spray connection or surface with test fluid; leaks form bubbles. Tank unit available for large system applications. Hand sprayer produced for use with smaller equipment.

Pipe Thread Compound . . .

. . . in new formula for high temperature service—*Crane Co., Dept. HPAC,* 836 *S. Michigan Ave., Chicago* 5.

Anti-sieze compound said to provide effective lubricating, anti-sieze properties at temperatures to 1050 F. Highly adherent, compound will not run out or drip from vertical joints under high heat exposure, says manufacturer. Material will not harden, shrink, crack or crumble upon application, stays flexible inside of joints. Said to have no deteriorating effect on piping materials.



Boiler Blowdown . . .

. . . and sampling system—*Fred H. Schaub Engineering Co., Dept.*

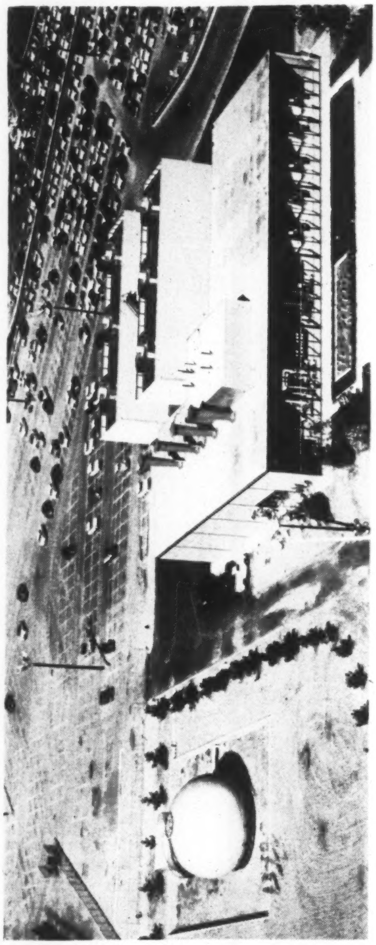
NEW YORK INTERNATIONAL AIRPORT — CENTRAL HIGH TEMPERATURE HOT WATER HEATING PLANT.

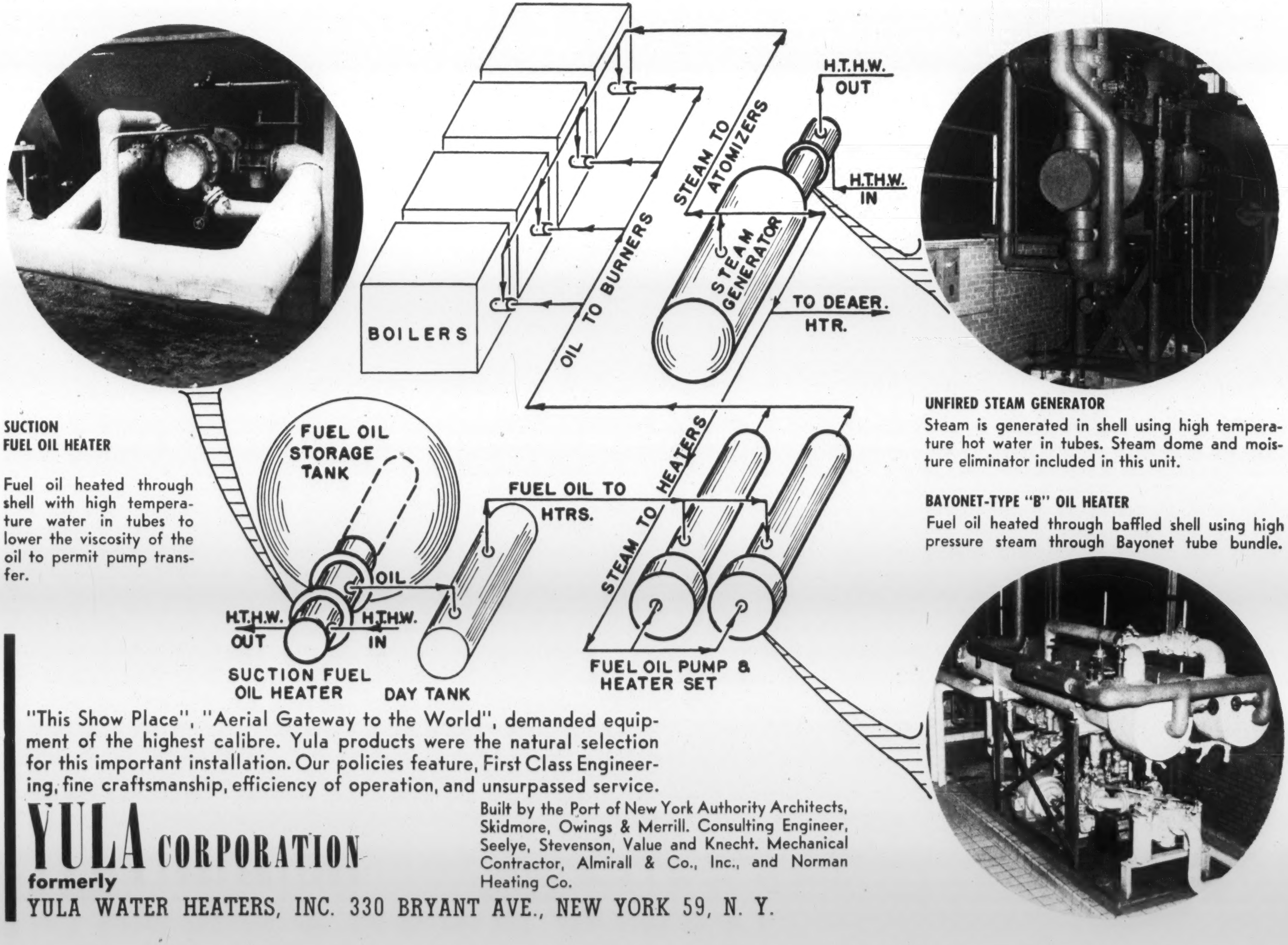
The diagram and photographs below show where YULA provided all the heat transfer units needed for handling No. 6 oil and generation of steam from H.T.H.W.

Preheating of No. 6 oil, using a combination of H.T.H.W. (380°F) and steam, can produce problems. Not so when YULA's complete line is used.

This installation is typical of the many fine buildings now using YULA equipment.

SPECIFY AND BUY YULA FOR THE VERY BEST!




BOILERS
OIL TO BURNERS
STEAM TO ATOMIZERS
STEAM GENERATOR
H.T.H.W. OUT
H.T.H.W. IN
TO DEAER. HTR.
FUEL OIL STORAGE TANK
OIL
H.T.H.W. OUT
H.T.H.W. IN
SUCTION FUEL OIL HEATER
DAY TANK
FUEL OIL TO HTRS.
STEAM TO HEATERS
FUEL OIL PUMP & HEATER SET

SUCTION FUEL OIL HEATER

Fuel oil heated through shell with high temperature water in tubes to lower the viscosity of the oil to permit pump transfer.

UNFIRED STEAM GENERATOR

Steam is generated in shell using high temperature hot water in tubes. Steam dome and moisture eliminator included in this unit.

BAYONET-TYPE "B" OIL HEATER

Fuel oil heated through baffled shell using high pressure steam through Bayonet tube bundle.

"This Show Place", "Aerial Gateway to the World", demanded equipment of the highest calibre. Yula products were the natural selection for this important installation. Our policies feature, First Class Engineering, fine craftsmanship, efficiency of operation, and unsurpassed service.

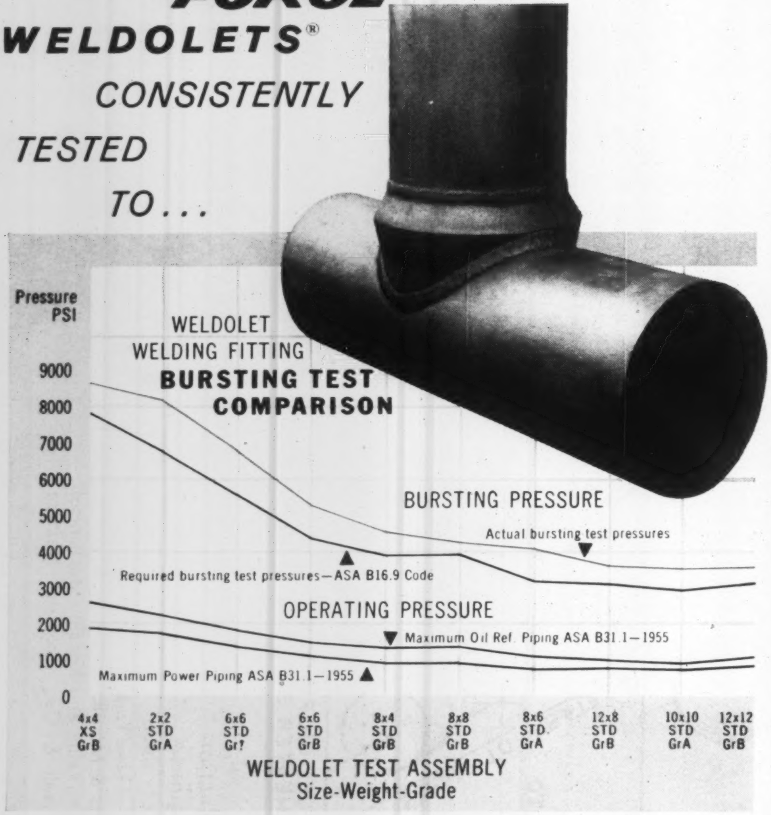
Built by the Port of New York Authority Architects, Skidmore, Owings & Merrill. Consulting Engineer, Seelye, Stevenson, Value and Knecht. Mechanical Contractor, Almirall & Co., Inc., and Norman Heating Co.

YULA CORPORATION

formerly

YULA WATER HEATERS, INC. 330 BRYANT AVE., NEW YORK 59, N. Y.

BONNEY FORGE
WELDOLETS®
CONSISTENTLY
TESTED
TO...



...OVER
4½ TIMES MAX. OPERATING PRESSURE

"Shape of Reinforcement"—has been pioneered by Bonney for the past 20 years. The fact that shape is as important and even more important than area replacement for branch reinforcement is now gaining wide industry recognition. Even though Weldolets *do* have sufficient area replacement, the factor setting them apart from conventional lap type reinforcement is their SHAPE . . . Reinforcement close to the juncture—completely bonded homogeneous reinforcement avoiding cracks, fillet welds, and re-entrant corners—reinforcement tapering at the sides to prevent abrupt change in thickness where fitting joins header pipe.

Recent design improvements in the Weldolet line, based on extensive stress analysis tests, provide all these desirable "shape" factors. Specify and use Weldolets for all your full size and reducing branch connections. They are available in carbon steel and all alloys for any piping service.

BONNEY

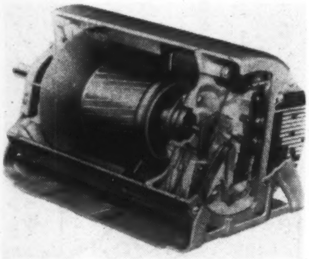
WELDOLETS®
THREDOLETS®
SOCKOLETS®
ELBOLETS®
BRAZOLETS®
SWEEPOLETS®
• • • • • • • • • •
CARBON STEEL
STAINLESS
ALLOY
for all services

BONNEY FORGE and TOOL WORKS
ALLENTOWN, PENNSYLVANIA

EQUIPMENT DEVELOPMENTS
Continued

HPAC, 2110 S. Marshall Blvd., Chicago 23.

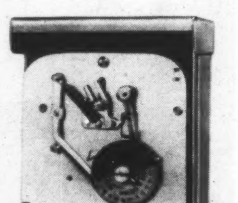
Components of system include: volume control valve, strainers with drain manifold, insulated flash tank with drainer. Unit said to provide all function of continuous blowdown, but under manual control. Accommodates one, two, three, or four blowdown stations with total capacity up to 5000 lb blowdown per hr for either 250 or 600 psi working pressure.



Fan Motor Switch . . .

. . . in totally encased design—*A. O. Smith Corp., Electric Motor Div., Dept. HPAC, Tipp City, Ohio.*

New encased switch resistant to dust, dirt, sand, etc. New starting switch package-switch, capacitor, actuator, thermostat, terminal board —is being adapted to every model in manufacturer's single phase blower motor line.



Time Switch . . .

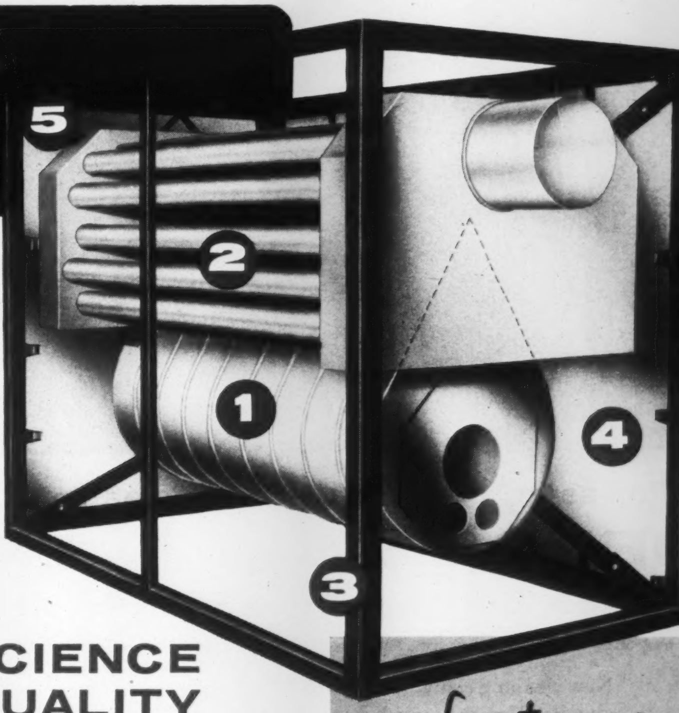
. . . designed for control of substantial loads under severe operating conditions—*Paragon Electric Co., Dept. HPAC,* 1609 12*th St., Two Rivers, Wis.*

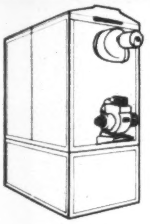
"2100 Series" heavy duty time

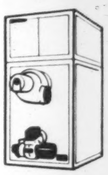
New

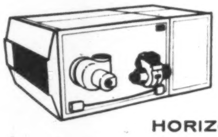
MAXI-THERM

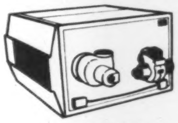
Stainless Steel, Heavy Duty Furnaces




UP FLOW


COUNTER FLOW


HORIZONTAL


DUCT

FOR THE CONSCIENCE CALLING FOR QUALITY

Humble of birth but proud of purpose, a new high capacity furnace has come into being after years of development and field-proof. It is built for the discerning — those willing to set patterns, not follow them — those who can tell a quality product without its name plate. Yet this quality is somewhat betrayed by its price which will appeal to all.

Not a new concept in industrial and commercial warm air heating, but rather a new philosophy — a promise of superiority from engineering down to the last weld in the new, stronger, heavier gauge #442 stainless steel combustion chamber. As a small manufacturer, we cannot afford to settle for less. The success of MAXI-THERM must be linked strongly to its inherent quality.

And once you have inspected the new MAXI-THERM in any of its four models, you will agree that while our sights are set high, the finished product is "on the target."

For industrial and commercial applications from 120,000 to 2,500,000 BTU's. Larger specials can be constructed to your specifications. Available in Up Flow, Counter Flow, Duct and Horizontal Models to fit any space requirement efficiently. Oil and/or gas fired, single or dual fuel. Firing equipment U.L. or A.G.A. inspected or approved. Also a complete line of refractory lined furnaces in standard capacities to 2,000,000 BTU's.

features

1 **New, stronger, heavier gauge #442 stainless steel ribbed tear-drop construction, two-pass combustion chamber for longer life and greater efficiency.**

2 **Two-pass aluminized steel exchanger provides a four-pass system.**

3 **Quint-Angle one-piece welded 12-gauge frame construction.**

4 **Polished radiant shield.**

5 **Tube and transfer box access plate.**

Write for specification details or representation information

CSF

Chicago Steel Furnace Co.

9324 S. Anthony Ave. • Chicago 17, Illinois

For safer, easier equipment cleaning . . .

DRY ACID CLEANERS

based on Du Pont Sulfamic Acid

New cleaning compounds made with sulfamic acid are sold and handled *dry*—no hazardous liquids to ship or store. Dry or dissolved in water for use, they create no fumes. Yet these cleaners have all the penetrating power of hydrochloric acid with far less corrosive effect.

Sulfamic acid-based cleaners remove scale and deposits from air-conditioning and ice-making equipment, food-processing vessels, steam boilers, milk evaporators and pasteurizers, marine evaporators and heat exchangers. Cleaning action is fast, thorough.

We'll gladly send you more information on sulfamic acid-based cleaners and the names of formulators who offer these new compounds. Just mail the coupon below.

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. . . through Chemistry

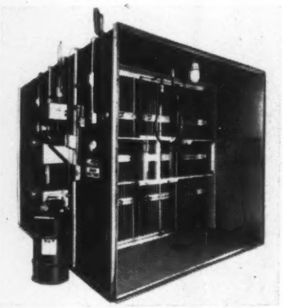
Du Pont
SULFAMIC ACID

E. I. du Pont de Nemours & Co. (Inc.)
Grasselli Chemicals Dept., Rm. N-2533HP
Wilmington 98, Delaware

Please send me: ☐ sulfamic acid general equipment-cleaning bulletin; ☐ names of formulators offering cleaners based on sulfamic acid.

*Name*________________
*Company*________________
*Address*________________
*City*________ *Zone*____ *State*________

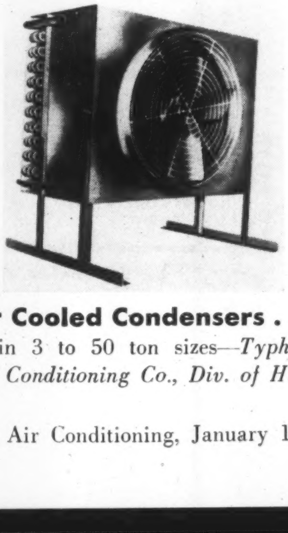
switches equipped with synchronous, self-starting motors with motor current consumption of 3 watts. Switch rating: 55 amp at 120/240 volts a-c. Plunger action, copper-to-copper contacts mounted integrally with pressure-type copper wiring terminals. Manual switching possible without interfering with automatic operation. Optional features include an omitting device with 7 day dial for eliminating operation on selected days.



Electronic Air Cleaners . . .

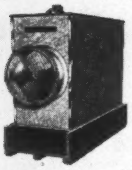
. . .designed for single operation cleaning and adhesive application — *Electro-Air Cleaner Co., Inc., Dept. HPAC, Olivia and Sproul Sts., McKees Rocks, Pa.*

"DAX" cleaning and adhesive solution, when mixed with water, promotes washing of collecting cell, dries, leaving adhesive coating on collecting plates and electrodes. "Type X" applicator system for solution supplied as package for vertical travelling washing systems or horizontal fixed washing systems.

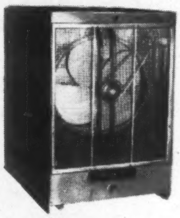


Air Cooled Condensers . . .

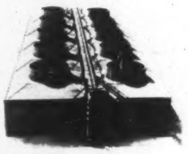
. . .in 3 to 50 ton sizes—*Typhoon Air Conditioning Co., Div. of Hupp*



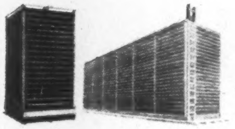
Horizontal Draft



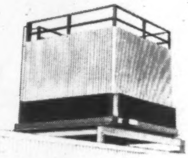
Water-Master



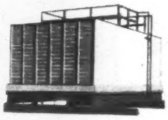
Industrial Induced Draft



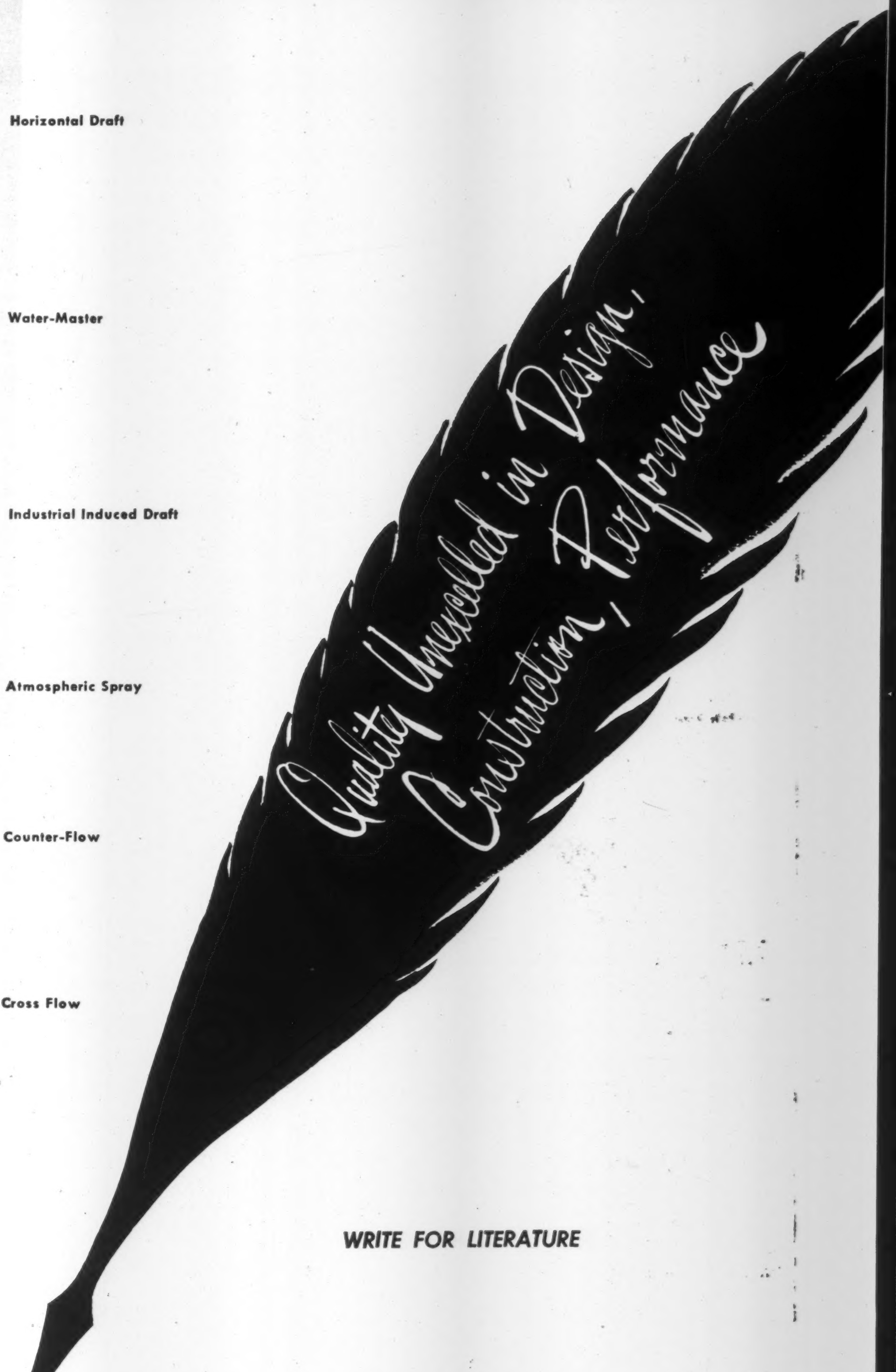
Atmospheric Spray



Counter-Flow



Cross Flow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Construction, Performance

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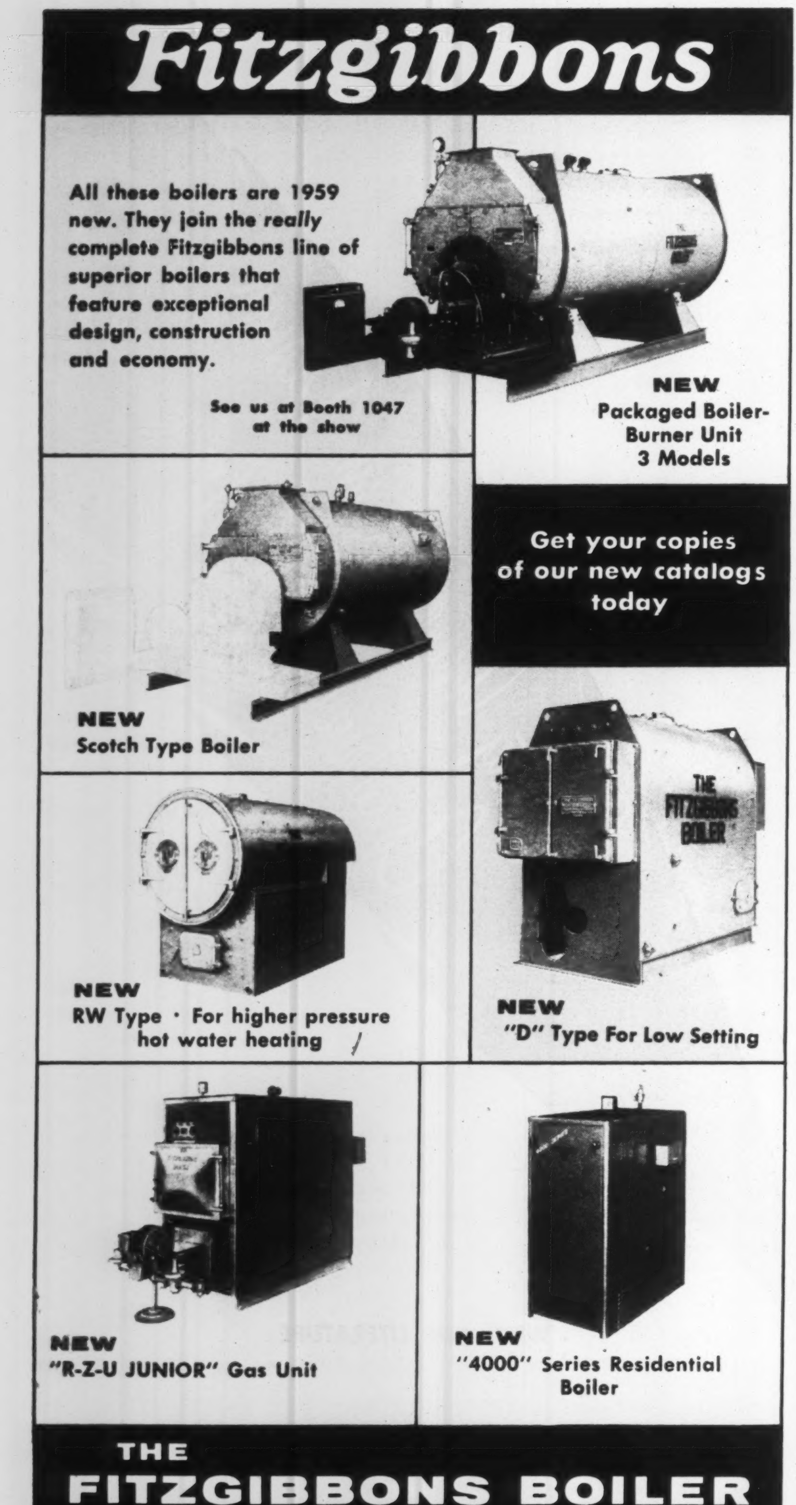
Lilie-Hoffmann Cooling Towers

1450 SO. VANDEVENTER AVE. • ST. LOUIS, MO.



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RW Type · For higher pressure hot water heating

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NEW
"R-Z-U JUNIOR" Gas Unit

NEW
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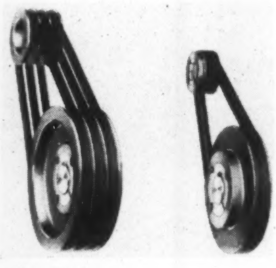
FITZGIBBONS BOILER
COMPANY, INC.
New York Sales and Executive Office: 101 Park Avenue, New York 17, N.Y.
Field Sales Office and Plant: Oswego, New York
BRANCHES AND REPRESENTATIVES IN PRINCIPAL CITIES

Corp., Dept. HPAC, 505 *Carroll St., Brooklyn* 15, *N. Y.*

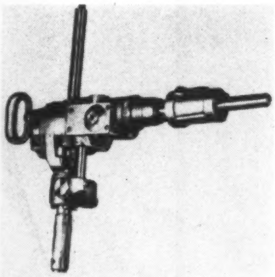
Condensers available in eight models with air movement ranging from 2750 to 40,000 cfm. Two smallest units—3 and 3.8 ton capacities—are direct driven; others belt driven. Coils made of $\frac{5}{8}$ in. OD seamless copper tubing and have embossed aluminum fins. Four-bladed deep pitch fans driven at low speeds: directly driven fans operate at 1140 rpm; larger models operate at 455 to 685 rpm. Optional "Win-trol" valve installed in liquid line between condenser and receiver for quick startup. Controls located at compressor.



V-Belt Drives . . .

. . . with small, light sheaves and high capacity V-belts—*Dodge Mfg. Corp., Dept. HPAC,* 500 *S. Union St., Mishawaka, Ind.*

"Dyna-V" drives in two standard groove sizes: "3V," $\frac{3}{8}$ in. nominal top width size; "5V," $\frac{5}{8}$ in. for higher hp. Sheaves in "3V Series"—form 1 to 10 grooves—designed for drives from 1 to 50 hp. "5V Series" includes sheaves to take from 3 to 10 of $\frac{5}{8}$ in. belts and handle up to 200 hp. Custom "8V Series" accommodates hp requirements to 1500.



Tube Expanders . . .

. . . in two air-driven heavy duty

CARNES

POWER ROOF VENTILATORS

PROVIDE QUIET, ECONOMICAL VENTILATION

in the new BADGER HIGH SCHOOL

Lake Geneva, Wisconsin

ARCHITECT: Von Grossman
5455 West Burleigh
Milwaukee 10, Wis.
ENGINEER: Lofte & Fredericksen
328 West Brown
Milwaukee, Wisconsin
CONTRACTOR: R. T. Morrill
524 East Grand Avenue
Beloit, Wisconsin

Carnes Power Roof Ventilators are providing the ventilation answer on many of today's new low parapet school buildings—like the Badger High School, illustrated, at Lake Geneva, Wisconsin.

Features of the Carnes line of Powered Roof Ventilators include: low silhouette design; direct and belt drive centrifugal fans, all aluminum construction to reduce normal corrosion and maintenance; protected motors, installed in a totally enclosed, ventilated housing outside the air stream for long trouble-free operation; and exclusive "Vibratrol" mounting principle to reduce motor and fan noise to an absolute minimum.

You'll be interested in the new Carnes Ventilator Catalog V-59 just off the press. Write for it! Address Carnes Corporation, Department RF, Verona, Wisconsin, U.S.A.

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Roof and
Sidewall
Ventilators
CARNES

CARNES

CARNES corporation
Verona, Wisconsin

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Select
CYCLOTHERM
STEAM
& HOT WATER
GENERATORS

TO SAVE COSTS

Factory-trained Cyclotherm engineers will . . . without charge . . . work with you from drafting board to final installation to estimate your steam demands.

TO SAVE TIME

Factory-trained Cyclotherm servicemen are as close as your telephone . . . at any hour of the day, night or week-ends.

TO SAVE SPACE

Cyclotherm Steam Generators range from 15 to 750 hp. . . . from 15 to 200 psi. For industrial and commercial establishments, shipping, institutions.

Planning a new building? Remodeling an existing structure? As much as 1/3 smaller than other packaged units, the Cyclotherm Steam or Hot Water Generator allows more space for storage and production. Needs only a minimum-sized, minimum-cost boiler room. Or your Cyclotherm can be placed in a working area. Its radiant heat loss is at a minimum.

Lighter-weight, it costs less to transport. Simpler in design, it requires less rigging time . . . lower rigging costs.

Yet it delivers a guaranteed 80% efficiency . . . pays for itself in a few years in fuel savings alone . . . cuts maintenance costs up to 50%.

Exclusive, patented Cyclonic Combustion combined with simplicity of boiler design produces maximum heat transfer wringing every degree of heat from each fuel molecule . . . wasting none. Does in 2 passes what other combustion methods accomplish in 4. Cyclotherm's even rate of heat transfer eliminates localized, heat-retarding scale and "hot spots." All these features assure you of long life and maximum performance.

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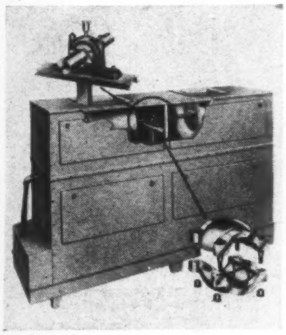
☐ Please send me your illustrated folder on Cyclotherm Steam Generators.

EQUIPMENT DEVELOPMENTS
Continued

models—*Thomas C. Wilson, Inc., Dept. HPAC, 21-11 44th Ave., Long Island City, N. Y.*

"Model B" tube expander available in three versions ranging 38 to 22 ft-lb torque and 450 to 750 rpm. Designed for heat exchangers used in oil refineries, chemical plants, other processing operations. May be used with ferrous or nonferrous tubes to 1½ in. OD. "Model C" available with 75 ft-lb of torque and 200 rpm. Unit can roll up to 3 in. in ⅝ in. sheet.



Split Bearing . . .

. . .designed to eliminate need for shaft removal—*Randall Graphite Bearings, Inc., Dept. HPAC, Greenlawn and Lake Sts., Lima, Ohio.*

Split bearing said to permit bearing replacement without repositioning or disassembling unit. Split design gives closure of bearings at any point along shaft. Available for standard shafts 1-3/16 through 3-3/16 in. diam. Two piece bronze ball assembly is self-aligning, mounted in cast iron base and in pillow blocks.

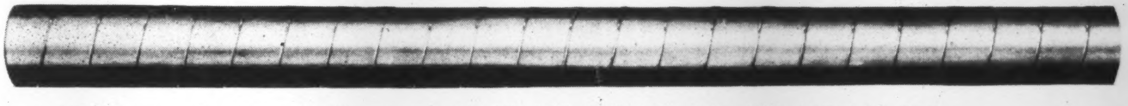
Sight Glass . . .

. . .making use of light refraction to indicate amount of refrigerant charge—*Ansul Chemical Co., Dept. HPAC, Marinette, Wis.*

Using light refraction principle, word "Full" printed at bottom port of glass is plainly visible only when refrigerant is at full charge. When level is low, word is blurred so illegible. "Line-Flo" sealed by brass-to-

SPECIALISTS IN LOW LOSS COMPONENTS FOR HIGH VELOCITY SYSTEMS

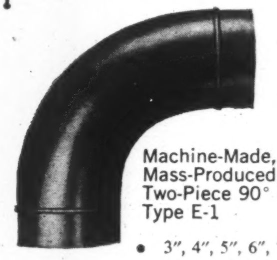
✳SPIRAL *Lockseam* DUCT



- Diameters: 3″, 3¾″, 4″, 5″, 6″, 7″, 8″, 9″, 10″, 11″, 12″, 14″, 16″, 18″, 20″, 22″
- Furnished In Any Lengths Up To 20′ As Continuous Duct — 12′ Lengths Are Standard
- Machine Made to Perfect Roundness. Four-Ply "Lockseam" Spiral Ribbing Structure Maintains The Roundness By Stiffening
- Ribbing Stiffens Duct With Less Deflection Between Suspending Hangers, Insuring A Straight Air Path
- Installations Can Be Assembled With Far Fewer Than The Standard 40 Joints Per 100 Feet
- Manufactured Of Premium Grade Rust Resistant Galvanized Sheet. Spiral "Lockseam" Duct Has No Coating Irregularities

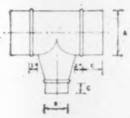
✳LOW LOSS FITTINGS

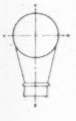
Die-Stamped "Laminar-Flo" 90° Elbows, Laterals, Conical Tees and Bellmouth Fittings

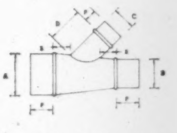


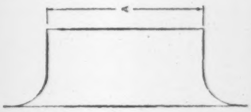
Machine-Made, Mass-Produced, Two-Piece 90° Elbow, Type E-1

- 3″, 4″, 5″, 6″, 7″, 8″ Diameters
- 20 Ga. Galvanized Steel
- Continuous Weld





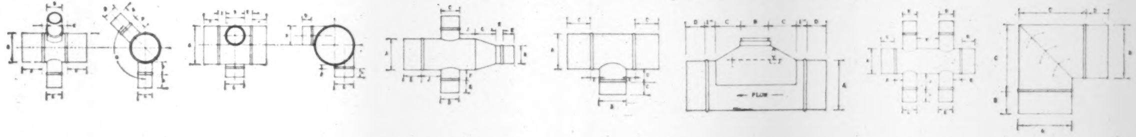




Now you can specify 90° elbows with consistent and predictable performance characteristics. United's "Laminar-Flo" die-stamped 90° elbows have been thoroughly tested. They markedly reduce friction loss in high velocity systems, and are a logical replacement for hand-made segmented elbows.

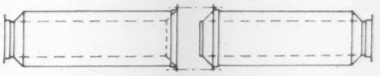
✳STANDARD FITTINGS

Elbows, Tees, Crosses, Dampers, Couplings, Reducers, End Caps, Square-to-Round Tap Connections Available For Every Diameter Of Duct



✳SOUND ABSORBERS

High Pressure — Low Friction Loss. Designed Especially For High Velocity Air Systems



New Catalogs, Friction Loss Chart Manual, and Complete Testing, Engineering and Installation Data Available On Request. Write to Dept. 102

Representatives At:
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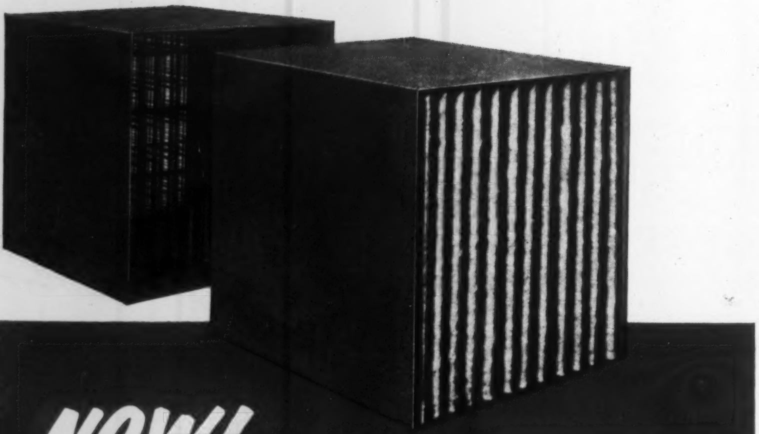
January 26-29 Philadelphia

spiral pipe division
United
SHEET METAL COMPANY, INC.
COLUMBUS, OHIO



NOW! Cambridge AEROSOLVE® Filters Available in HIGH VELOCITY MODELS!

80% More Air per sq. ft. face area

45% Less Area per given cfm.

. . . at No Increase in Pressure Drop

Already famous for its low owning and operating cost, the Cambridge AEROSOLVE Filter in the new high-velocity models offers even greater economies. Compare:

	High-Velocity AEROSOLVE	Standard AEROSOLVE
Rated Capacity (24" x 24" face area)	1800 cfm.	1000 cfm.
Face Velocity	450 fpm.	250 fpm.
Area of Filter Medium	86 sq. ft.	43 sq. ft.
Ratio, Filter Area to Face Area	21.50 to 1	10.75 to 1

Choice of 3 Efficiencies

High-velocity AEROSOLVE cartridges are, like the Standard models, available in efficiencies of approximately 95%, 85% and 35% (discoloration test with atmospheric dust). All cartridges are interchangeable and are easily secured in permanent cadmium-plated frames by quick-acting fasteners at the corners. No other strainer-type air filter of comparable efficiency approaches the low pressure drop of these units.

Other than infrequent cartridge changes, AEROSOLVE filters require no maintenance. Installation is also low in cost. In high-velocity systems, the new units obviate the need of V-ing the filter bank and result in even greater installation and maintenance economies.

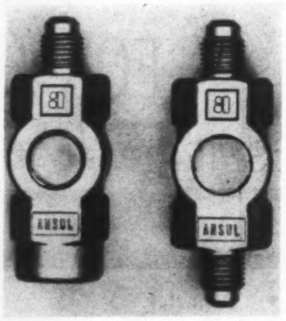
Write for Bulletin 130

Cambridge Filter Corporation

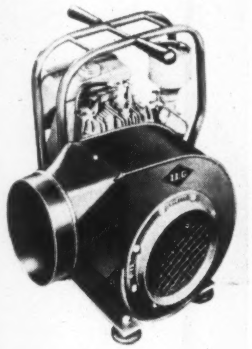
732 E. Erie Blvd., Syracuse 3, N. Y.

Makers of the ABSOLUTE® Filter— World's Most Efficient Air Cleaning Device

REPRESENTATIVES IN PRINCIPAL CITIES



glass fusion by heating brass, inserting glass "eye". Available with male-male or male-female connections in standard sizes 1/4 to 1/2 in.; 5/8 in. size available only in male-male connections.



Gas Engine Driven Fan . . .

. . .with direct connection of fan wheel and four-cycle engine—*Ilg Electric Ventilating Co., Dept. HPAC,* 2850 *N. Pulaski Rd., Chicago* 41.

"Type B" volume light weight, self-contained direct connected to four-cycle engine for permanent alignment. No batteries required. Unit available in two types: gasoline and propane motors. Bulletin "257-20" describing product available on request.

Pillow Block Units . . .

. . .in new line—*Sealmaster Bearing Div., Stephens-Adamson Mfg. Co., Dept. HPAC, Ridgeway Ave., Aurora, Ill.*

"LP Series" ball bearing pillow block is one-piece malleable unit, ready for assembly on shaft. Each

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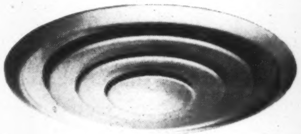
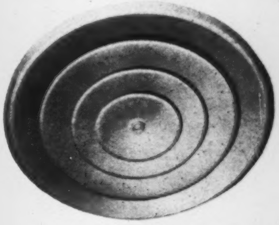
Diffusers-Registers-Grilles



Series "QP" Diffusers
1—Adjustable pattern
2—Fixed blades
3—Supply and return

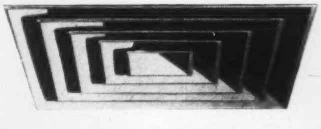
Series "V" Diffusers—
adjustable pattern
Series "R" Diffusers—
adjustable volume



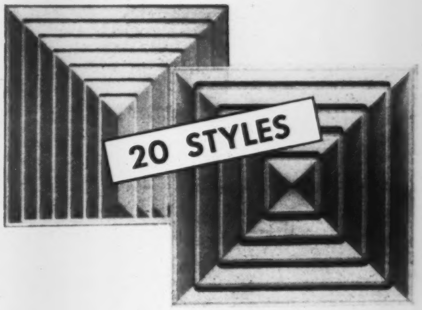
Series "B" Diffusers—
fixed cone for
general application

MEET EVERY DEMAND

"LINE-AIR" Long Slot Diffusers



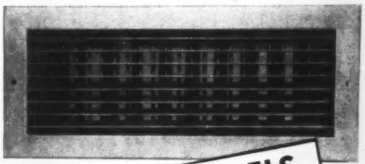
Series "HAR" Diffusers—
adjustable volume control
Series "HAV" Diffusers—
adjustable pattern control



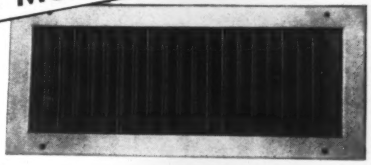
20 STYLES

Series "MP" multi-pattern
ceiling diffusers

REGISTERS & GRILLES



23 MODELS



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☐ Send Stream-Flow Register and Grille Manual #39
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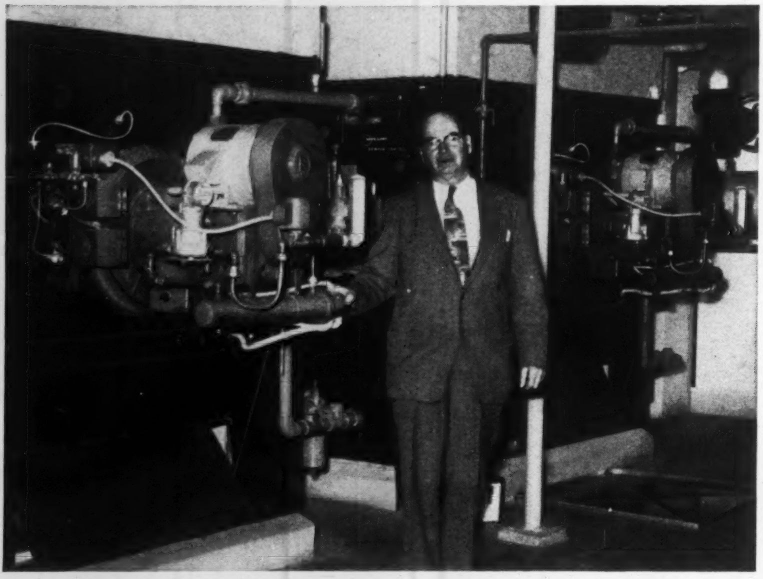
38 Marbledale Road, Tuckahoe, N. Y.
Sales offices in principal cities of United States and Canada

"I've handled the ENTERPRISE line for 12 years. They're still the best burner buy!"

Says Al Wilcox, Enterprise Burner Distributor, Seattle, Wash.



Mr. Wilcox and the two Size K-3 Enterprise Oil Burners installed at Asa Mercer Jr. High School, Seattle.

Engineers, Contractors, Users—all agree:

"Everyone Benefits When It's an Enterprise!"

"As a long-time Enterprise dealer," Mr. Wilcox writes, "I know the advantages to all concerned of installing the best oil burner made – an Enterprise.

"Engineers and contractors benefit because Enterprise delivers high performance so uniform that burners are frequently specified as 'Enterprise or equal.'

"Users benefit from operating efficiency and economy beyond their expectations – year after year and with minimum servicing needs.

"And by supplying the top quality burner all groups want, the dealer benefits – through satisfied customers, little servicing, and excellent relations with the Enterprise factory people."

You're bound to agree with Mr. Wilcox, too. Just check the complete range of Enterprise Burner sizes shown here. If your specifications fit, your best buy is an Enterprise. Get all the facts, today!

HORIZONTAL ROTARY OIL BURNERS, & COMBINATION OIL & GAS BURNERS

INPUT				OUTPUT		
Burner Size	Motor HP	Oil-GPH Max	Gas CF/HR	Steam		Radiation-Sq. Ft. Steam
				LBS/HR	BHP	
AA	½	4	600	464	13	1880
A	½	7	1050	812	23	3280
C	½	15	2250	1740	50	7050
E	½	20	3000	2320	67	9400
F	¾	30	4500	3480	100	14100
G	1	35	5250	4060	118	16400
H	1	50	7500	5800	168	23400
H	1½	60	9000	6960	201	28200
J	2	75	11250	8700	250	35250
K	3	100	15000	11600	336	46900
L	3	135	20250	15660	453	63400
M	5	200	30000	23200	672	94000

The Choice of Heating Experts

ENTERPRISE

DEPENDABLE BURNERS

ENTERPRISE ENGINE & MACHINERY CO. • 18TH AND FLORIDA STS., SAN FRANCISCO, CALIFORNIA

EQUIPMENT DEVELOPMENTS

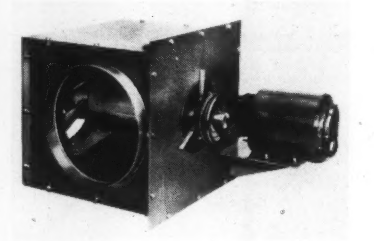
Continued

unit permanently sealed, pre-lubricated. Units available in following shaft sizes: ¾, ⅞, 15/16, 1, 1-3/16, 1¼, 1⅜, 1-7/16 in.

Packaged Air Conditioners

. . . rated 22, 25, 30 tons—*Westinghouse Air Conditioning Div., Dept. HPAC, P. O. Box 510, Staunton, Va.*

Components of entire unit, including fan and motor drive, are completely enclosed in cabinet. Exterior panels can be removed for service accessibility. Humidity and capacity control obtained from multiple compressor operation.



Draft Inducer . . .

. . . intended for small commercial plants—*L. J. Wing Mfg. Co., Div. of Aero Supply Mfg. Co., Inc., Dept. HPAC, 140 Vreeland Mills Rd., Linden, N. J.*

"10-D" draft inducer has air handling capacity for heating systems with inputs up to 8½ gph of oil and 1100 cfh of natural gas. Unit can be mounted horizontally or vertically in breeching to provide flexibility for draft inducer and location of heating plant. Motor and fan assembly are one unit; bearings are air cooled and fan requires no lubrication.

Pressure Reducing Valve

. . . designed to give increased flow—*O. C. Keckley Co., Dept. HPAC, 3400 Cleveland St., Skokie, Ill.*

"No. 111A" pressure reducing valve features include: full orifice permitting higher capacities; provides service in applications normally requiring larger valves. Single seated valve has semi-steel body, bronze trim, composition disc and is suitable for pressures to 250 psi. Reduced pressures range from 1 to 100 psi.

As Convenient as Your Telephone!

Mundet Provides Complete Thermal Conservation Services for All Temperatures

For all users of temperature . . . for power, processing, air conditioning or cold storage . . . Mundet now offers the widest range of insulation products to meet individual needs most economically. Mundet products and thermal conservation services are available coast-to-coast, Canada to the Gulf. Supplementing our own conveniently located branch offices, we have an integrated network of highly qualified distributor-applicators, shown in the column at the right. These organizations, with established reputations in their areas, are ready to serve you promptly and most efficiently.

Performance and specification data bulletins on Mundet products will be sent promptly on request.

Mundet makes a full line of Industrial Insulations for all temperature ranges from minus 200°F to plus 1900°F, including: "Custom Molded" 85% Magnesia Pipe Covering and Blocks; Tri-Calite Calcium Silicate Insulation; Superfine Glass Fiber Blanket Insulation; Supertex Glass Fiber Duct Liner; Superglas Pipe Insulation; Spun Wool Blankets and Duct Insulations; Expanded Polystyrene Board and Pipe Covering; Corkboard and "Jointite" Cork Pipe Covering. Mundet Engineering Services cover all details from recommendations to final installation.

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Insulators, Inc.
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...not me or my men when I can get the new tough fast little

RIDGID© 300 Power Drive

For only $199.50*

*Subject to change without notice.

Weighs only 79½ lbs.—all metal!

Pats. Applied For

Full Speed...even on 2" pipe or conduit

This new 300 is clear out of its price class! Its RIDGID-built motor has extra power and extra-long brush life . . . heavy-duty bump-proof switch . . . RIDGID Speed Chuck with guaranteed tight grip, forward, reverse, replaceable jaw inserts and all-metal hand wheel . . . 2 extra-strong tool support bars . . . and a lot of other features that make it far the most for your money. You can't afford to be without it—see and try the new 300 at your Supply House!

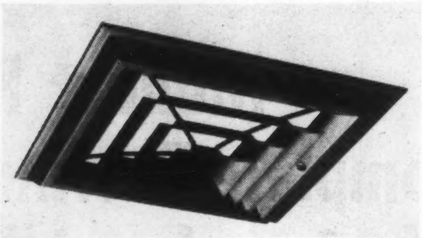
No. 1206 Stand for RIDGID 300 *Price $27.00

The Ridge Tool Company Elyria, Ohio, U.S.A.

THREADED PIPE . . . It's Tight . . . It's Best . . . Costs Less!

EQUIPMENT DEVELOPMENTS

Continued



Ceiling Diffuser . . .

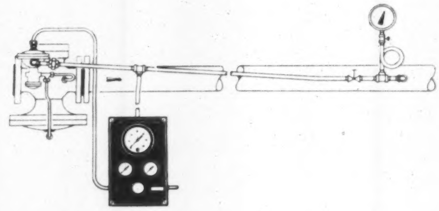
. . . with anti-smudge ring or section—*United States Register Co., Dept. HPAC, Battle Creek, Mich.*

Ceiling diffuser available in two models: "No. 1500 Round" and "No. 2500 Square" (pictured above). First has wide, deep anti-smudge ring; second has anti-smudge section. Damper is bi-valve when open with no static resistance and when half open it gives coverage over face of diffuser, according to manufacturer. Knob is snap type that can be snapped on and pulled off. When off, valves can be adjusted with screw driver.

Exhaust Systems . . .

. . . developed for removal of diesel smoke, carbon monoxide, welding, soldering fumes—*Ammerman Co., Inc., Dept. HPAC,* 110 *N. Second St., Minneapolis* 1.

"AirXpeler" system mounting permits 180 deg swing range. Collects fumes at source with hose (up to 5 in. in size). Blower discharge may be through wall, roof, or under floor. Standard units may be extended 22 ft from wall; swing arm is 12 ft long; flexible hose pulls out 10 ft. Blowers in sizes 1/20 to 1 hp.

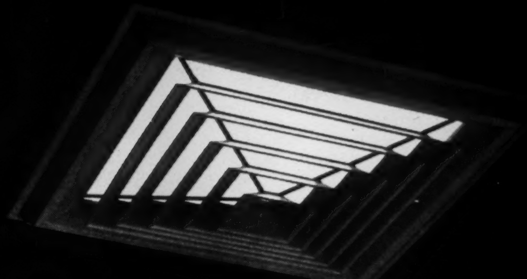


Valve Pilots . . .

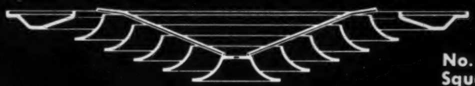
. . . for use with standard main valves—*Spence Engineering Co., Inc., Dept. HPAC,* 32 *Grant St., Walden, N. Y.*

. . . again presents the greatest commercial Values in Diffuser Lines

No. 1500
U.S. ROUND STEP-DOWN CEILING DIFFUSER
No. 1501 FLUSH-TYPE

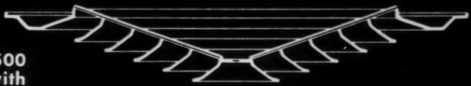


No. 2500 U.S. SQUARE
STEP-DOWN CEILING DIFFUSER
No. 2501 FLUSH-TYPE



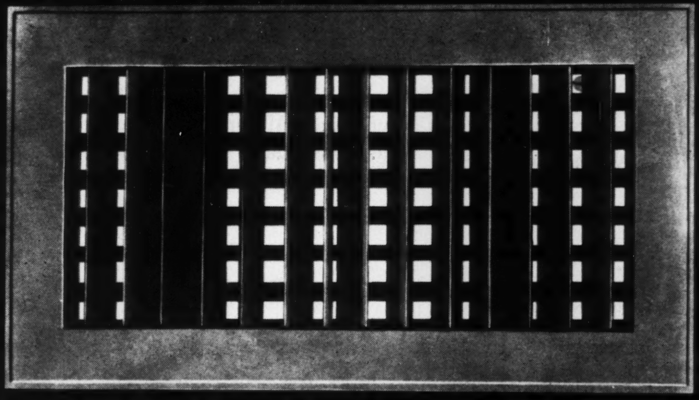
CROSS SECTION No. 1500

No. 1500 Round and No. 2500 Square Series—Furnished with Knob-Operated Damper which is furnished as separate item for Diffusers.



CROSS SECTION No. 2500

The No. 190 U.S. MULTI-FLEX AIR CONDITIONING REGISTER



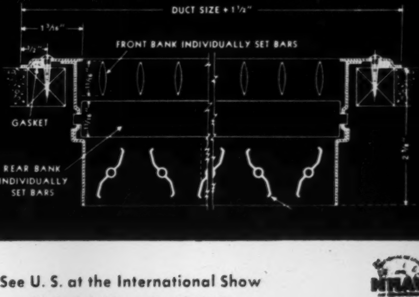
has Vertical Front and Horizontal Rear Individually Set Stream-Lined Bars—Vertical Opposed SCREW DRIVER OPERATED Rear Valves.

No. 191 Same as 190 but Grille Bars are Set in Reverse Position.

No. 192 One Row of Vertical Bars, Key Operated Opposed Valves.

No. 192-L One Row Vertical Front Bars, Lever Operated Valves. Ideal for Wall Setting on account of Shallow Body.

CROSS SECTION of No. 190 MULTI-FLEX REGISTER →


DUCT SIZE + 1½"
1 7/16"
FRONT BANK INDIVIDUALLY SET BARS
GASKET
REAR BANK INDIVIDUALLY SET BARS

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"Note the True Ball Joint ...that's a DART Exclusive"

Yes, Dart Unions fit tighter and last longer because their two bronze seats are precision ground to a true ball joint. You get a drop-tight connection without straining arm, wrench or union. What's more, a Dart uncouples just as easily. Ask your supplier.

QUICK FACTS

- Extra wide bronze seats resist pitting and corrosion.
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- Heavy shoulders can withstand the toughest wrench abuse
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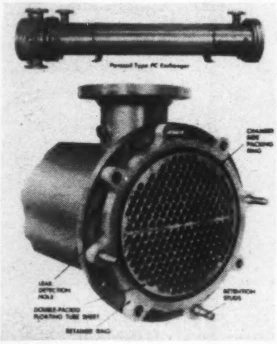
AVAILABLE THROUGH YOUR LOCAL DISTRIBUTOR

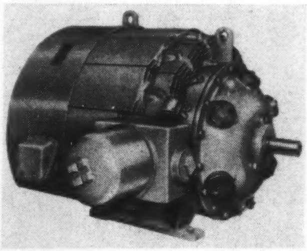
Air-loaded valve pilots interchangeable with pilots of existing regulators. Adjustment of air loading from remote control station permits easy adjustment of control setting of new pilots, says manufacturer. Air control panel developed for use with pilots includes supply, loading air gages, non-bleed air pressure control valve, optional delivery pressure gage.



Heat Exchanger Packing . .

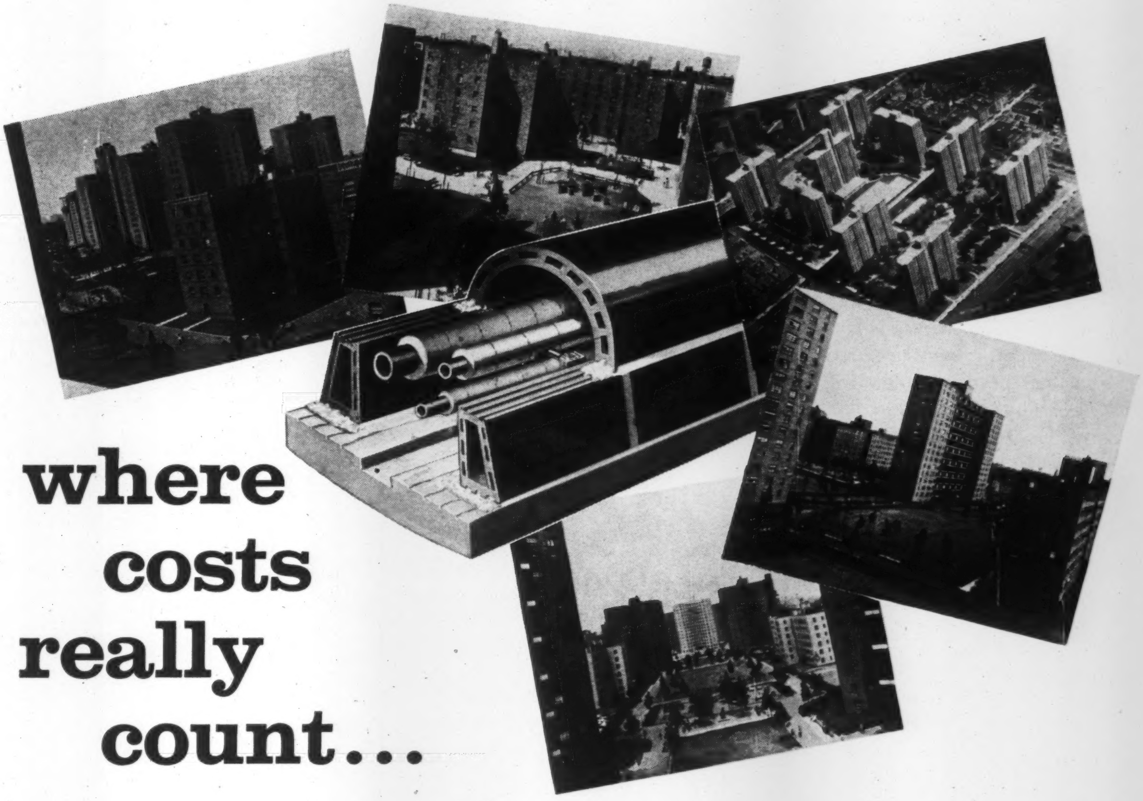
. . . developed to speed up, simplify inspection and service—*Davis Engineering Corp., Dept. HPAC,* 1064 *E. Grand St., Elizabeth* 4, *N. J.*

"Type PC" heat exchanger has new type of packing retainer ring that permits shell side pressure tests to be made with tube ends exposed. Tubes may be rerolled or even replaced without removing tube bundle from shell, or without disturbing side connections. Mixing of shell and tube side fluids said to be impossible with retainer ring.



Heat Exchanger Motor . . .

. . . designed to provide wide adjustable speed range—*Louis Allis Co., Dept. HPAC,* 427 *E. Stewart St., Milwaukee* 1.



where costs really count...

Therm-O-Tile SAVES 3 WAYS!

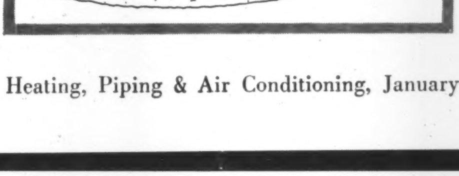
Consulting Engineers throughout the nation specify tile conduit for their public housing projects. Used in project after project for the nation's largest cities, Therm-O-Tile has proved itself efficient and economical in these 3 important areas:

1. **LOW INITIAL COST** . . . Simple installation of low cost materials makes for construction economy.
2. **LOW MAINTENANCE COST** . . . Piping failures within the Therm-O-Tile conduit can be easily and quickly located . . . easily and quickly repaired.
3. **LONGER LIFE** . . . Proved stronger in controlled laboratory testing than standard or extra-strength tile . . . non-deteriorating Therm-O-Tile installations last longer

In New York City alone, many miles of Therm-O-Tile have been installed in Housing Authority projects. Among them:

- Albany Houses
- Astoria Houses
- Bay View Houses
- Brownsville Houses
- Bushwick Houses
- Carver Houses
- Castle Hill Houses
- Jefferson Houses (Section III)
- Marcy Houses
- Marlboro Houses
- Millbrook Houses (Section II)
- Parkside Houses
- Red Hook Houses

For complete details and test results, write today to H. W. Porter & Co., Inc., 825 Frelinghuysen Ave., Newark 12, N. J. or to the office nearest you.



Therm-O-Tile®

CONDUIT

FOR UNDERGROUND PIPING

H. W. PORTER CO., INC.—NEWARK 12, N. J.
or Subsidiary
REID HAYDEN, INC.—BALTIMORE • CHARLOTTE • RICHMOND

EQUIPMENT DEVELOPMENTS

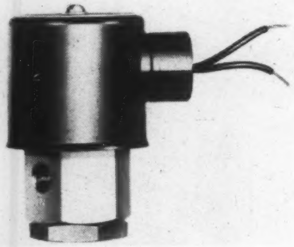
Continued

Motor available in ratings 25 to 300 hp constructed in explosionproof enclosures for hazardous installations and with standard enclosed construction for protection against severe atmospheric conditions. Intended for indoor, unprotected outdoor service in oil, chemical, steel, and other industries. Adjustable speed of motor extends 5 percent of base motor speed by armature control (constant torque) to 400 percent of base speed by field control (constant hp). Integrally mounted a-c fan motor supplies constant flow of cooling air regardless of speed of d-c motor. Can be mounted horizontally or vertically with shaft up or down.

Insulation Adhesives . . .

. . .designed for rapid bonding of insulation to ductwork, other metal surfaces also for vapor barrier sealing—*Columbia Cement Co., Inc., Dept. HPAC, 150 Ingraham St., Brooklyn, N. Y.*

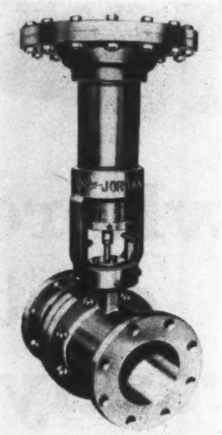
"Kwik-Bond" formulated to cover 300 sq ft per gal. Material bonds within seconds but retains flexibility 12 hr after application, according to manufacturer. Available for application in 5 gal pails or 55 gal drums.



Solenoid Valve . . .

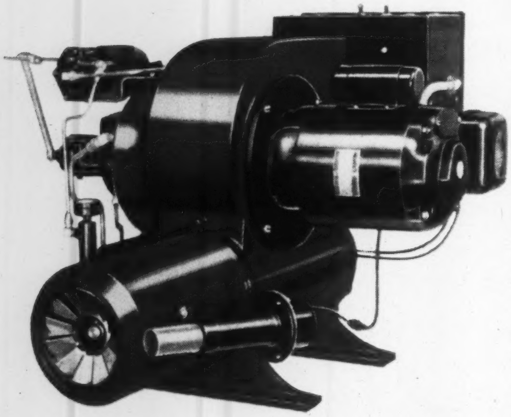
. . .3¼ in. high—*Aktomatic Valve Co., Dept. HPAC, 545 W. Abbott St., Indianapolis 25.*

"Type TT, Tiny" solenoid is single seated, angle type valve machined from brass bar stock with stainless steel plunger and point assembly. Direct lift operation intended for applications where wide range of pressures coupled with little flow. May be used for air, gases, water, oil, steam. Pressure range: zero to 400 psi (no pressure needed to open valve). Pipe sizes: ⅛ and ¼ in.



Control Valve . . .

. . .developed for heating and cooling applications—*Jordan Industrial Sales*



FOR HEATING AT ITS BEST
WHEN WEATHER DOES ITS WORST —

HEV-E-OIL BURNERS

Hev-E-Oil burners furnish all the air necessary for combustion, assuring perfect fire control under all weather conditions. Low fire start that builds up gradually to the flame size required means smooth, safe operation. And once the burner is set for greatest efficiency, it *stays* that way no matter what the weather.

A complete package! Fire tested! Automatic, electronic controls. Meets all codes. Easy to install . . . Hev-E-Oil models from 5 to 150 gph. Also available, Hev-E-Duty power gas burners and combination gas/oil burners from 720,000 to 21,000,000 B.T.U.

For more information write Industrial Combustion, Inc., 4507 N. Oakland Ave., Milwaukee 11, Wis., Dept. HPA-159.

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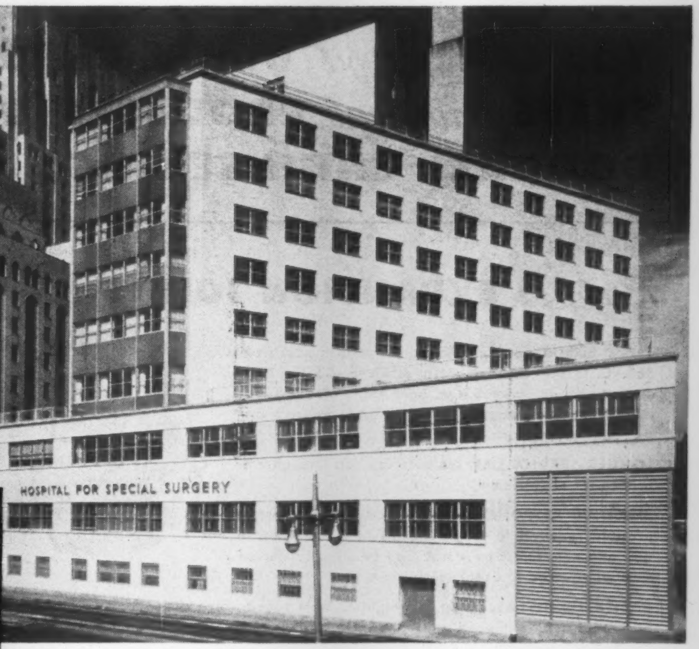
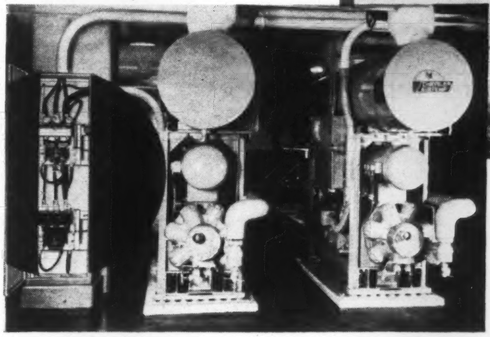
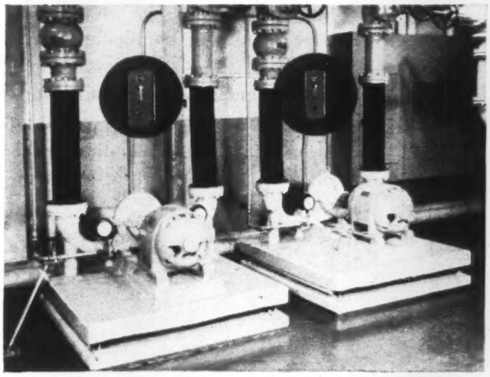




One of the two A-B Bulletin 736 Size 5 part winding reduced voltage starters used with the 125 hp, 220 v motors for the packaged chillers.



This shows two A-B Bulletin 712 Size 2 combination starters for the 15 hp, 220 v condenser pumps.

Heating, Ventilating, and Air Conditioning Contractor: Kennedy-Scheidel and Young, Inc.; Engineers: Meyer, Strong and Jones.

Allen-Bradley Control was a "Natural"—because dependability was so important in this air-conditioning system

Each year more and more air conditioning consulting engineers select Allen-Bradley quality motor control because they *know* it will provide the dependable performance that they—and their customers—must have.

Allen-Bradley motor controls are reliable because they have the simplest operating mechanism yet devised . . . there is only ONE moving part. This solenoid construction—which only Allen-Bradley can furnish in *all* starters up through Size 8—is your assurance of years of trouble free performance. There are no bearings to corrode and stick . . . no flexible jumpers to wear and break. And the double break, silver alloy contacts are always in perfect operating condition . . . and *remain* so until completely worn away. In addition, all A-B starters have permanently accurate thermal overload relays that prevent motor burnouts.

You will obtain the motor control of *proven* reliability if you insist on Allen-Bradley. It's the motor control you can install . . . and forget!

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1335 S. First St.
Milwaukee 4, Wis.
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Galt, Ontario

A-B
QUALITY

ALLEN-BRADLEY
MOTOR CONTROL
QUALITY

YOU CAN *Profit* BY THE USE OF THESE *Practical* PRODUCTS OF GOODALL ENGINEERING . . .

Rubber EXPANSION JOINTS

Custom-built to meet specific requirements in sizes from ⅜" I.D. to 96" I.D., for pressures up to 125 lbs. P.S.I. and/or vacuum. Available in Right Angle Sleeve Types and "Flang-Lok"; single or multiple arch; tapered; offset; and rectangular.

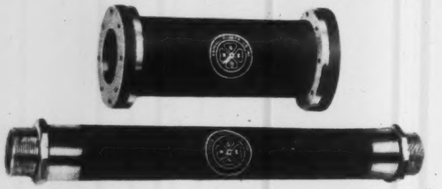
LONGER SERVICE LIFE. No deterioration through embrittlement or corrosion.

SENSITIVE RESPONSE TO PRESSURE. Only slightest pressure required to create movement in the joint, in any direction. Stress on metal pipe or other connected member reduced to absolute minimum.

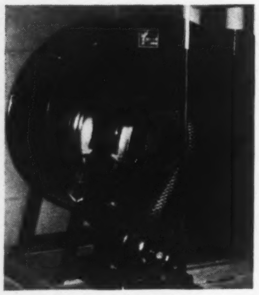
EASIER TO INSTALL. Light in weight . . . short face-to-face dimensions . . . retaining rings or flanges quickly aligned and bolted. No gaskets required.

Rubber VIBRATION —SOUND ABSORBER UNITS

Economical for use in many installations in place of expansion joints, for effective control of vibration and noise emanating from water pipes, air conditioning, heating and ventilating equipment. Strong, durable, resilient rubber compound, with wear and weather-resistant cover. Plain or with built-in wire reinforcement. Furnished with I.P.T. ferrules or steel split connecting flanges. Sizes ½" to 12" I.D., in lengths from 12" to 48".



"*Rubberhide*" LININGS FOR CORROSION CONTROL



"RUBBERHIDE" Linings are compounded to assure long-lasting protection against the particular corrosive agents involved. They will repay many times their cost through extended life of products, parts or equipment. Produced with either rubber or neoprene as the base material. Processed to objects shipped to our Linings Plants in Trenton, Chicago or Houston; or, when the objects are too large for such shipment, or the work involves fixed plant equipment, experienced field crews do the processing "on location".

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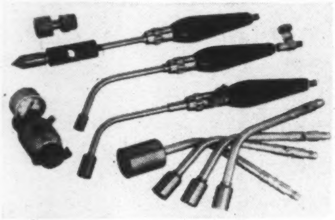
BRANCHES AND DISTRIBUTORS THROUGHOUT THE UNITED STATES.
IN CANADA: GOODALL RUBBER CO. OF CANADA LTD., TORONTO.

EQUIPMENT DEVELOPMENTS

Continued

Div. of OPW Corp., Dept. HPAC, 6013 Wiehe Rd., Cincinnati 13.

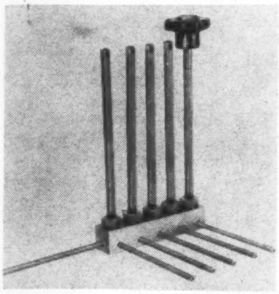
Sliding gate and plate temperature control valve systems said to be capable of 50,000 lb per hr steam capacity or 2300 gpm of water. Control temperatures from 35 to 450 F. Available in 4 and 6 in. sizes. Cast iron bodies recommended by manufacturer for pressures to 125 psi, temperatures to 450 F. Also available in copper, stainless steel, carbon steel, and monel.



Soldering, Brazing . . .

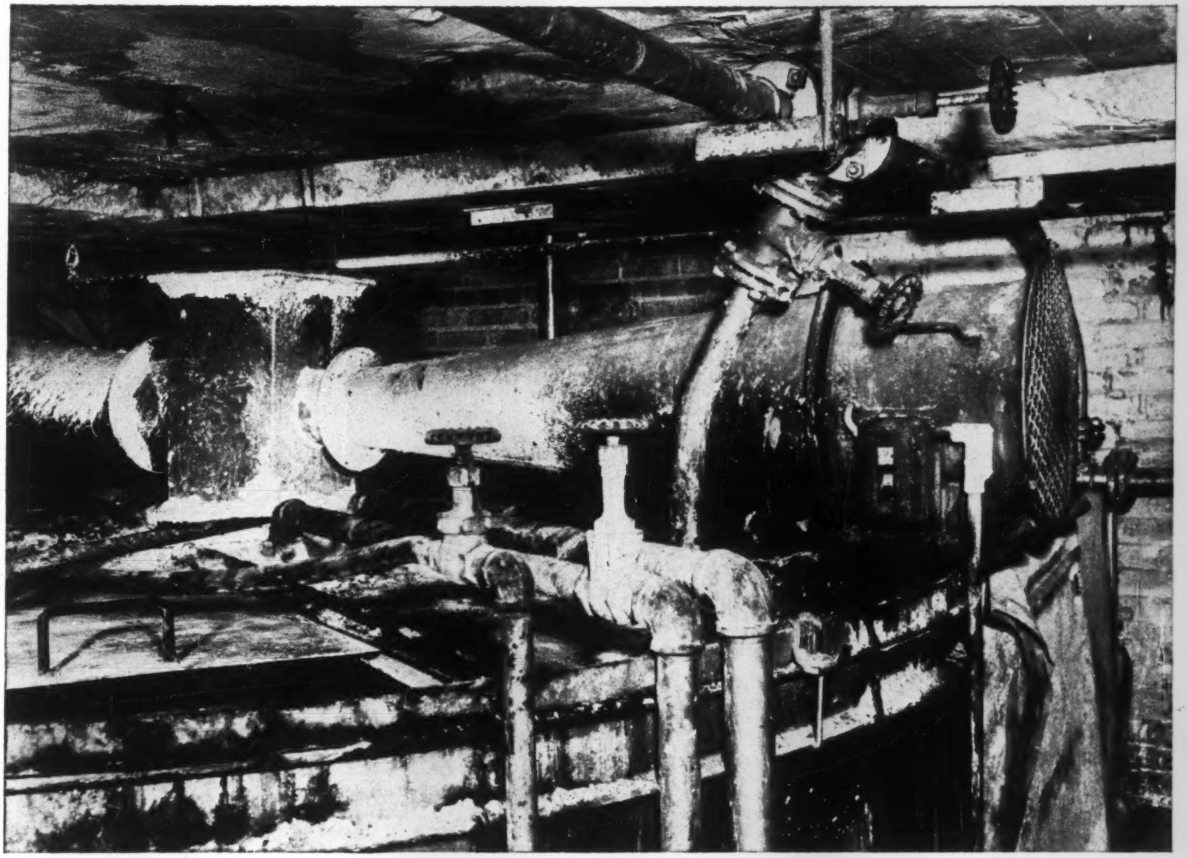
. . . in new line—*Linde Co., Div. of Union Carbide Corp., Dept. HPAC, 30 E. 42nd St., New York* 17.

New equipment includes open-flame torch stems in sizes 15/32 to 1½ in. diam.; enclosed flame soldering iron stem; "R-416" adjustable pressure regulator; double-duty (air-acetylene or LP-gas) hose assemblies. Open and enclosed stems fit interchangeably on three styles of torch handles. Items are streamlined, balanced, and light, according to manufacturer.



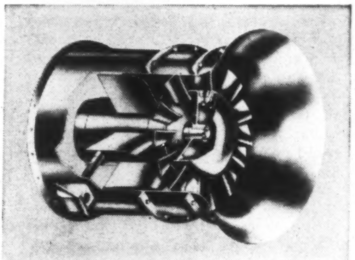
Packless Valve Manifold . .

. . . consisting of five packless valves with 0.0006 cu in. volumetric displacement—*George W. Dahl Co., Inc., Dept. HPAC, 86 Tupelo St.,*



Efficient Joy Axivane Fans vent corrosive fumes from tanks in chemical plant producing fatty acids and polyesters.

CORROSIVE ATMOSPHERE NO PROBLEM FOR THIS JOY AXIVANE® FAN



Other Bulletins also available:
Compressors 268C-41
Dust Collectors 267D-41

Joy Axivane Fans are used to vent extremely corrosive fumes in a number of electroplating and chemical plants across the land. Efficient, quiet, compact and durable Joy Axivane Fans are available in alloy steels or with special coatings to resist the most corrosive atmospheres.

Hundreds of standard models are available with either V-belt or integral drive. They are supplemented by a design service which will give you Joy Axivane Fans with whatever efficiency, capacity or pressure your installation requires.

For details write for Joy Fan Bulletin 268F-41.

Joy Manufacturing Company, Oliver Building, Pittsburgh 22, Pa. In Canada: Joy Manufacturing Company (Canada) Limited; Galt, Ontario.

WSW 17365-268

JOY . . . EQUIPMENT FOR INDUSTRIAL PLANTS . . . FOR ALL INDUSTRY

See Our Exhibit
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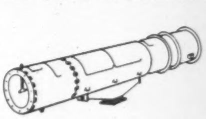
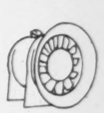
Heating and Air Conditioning Exposition

INDUSTRIAL COMPRESSORS



DUST COLLECTORS

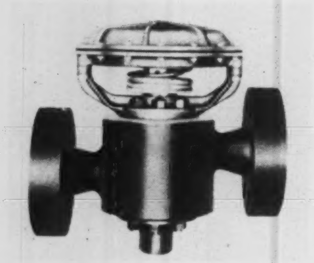
ELECTRICAL CONNECTORS



FANS AND BLOWERS

Bristol, R. I.

Packless valve manifold can be cam actuated for programming applications. Available with soldered, welded tubing, or NPT connections with applicable materials or manufacture for high or low temperature, for high pressure or vacuum service. Unit shown is stainless steel, with common inlet and individual outlet connections, stainless steel tubing 1/16 in. ID, 3/16 in. OD.



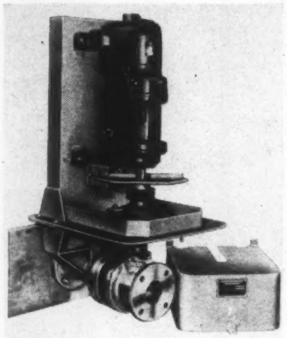
Air Control Valves . . .

. . . developed for precise control of high pressures—*Sinclair-Collins Valve Co., Dept. HPAC, 454 Morgan Ave., Akron 11, Ohio.*

Screwed or flange mounted and diaphragm operated, 5000 psi air control valves available with aluminum bronze billet or alloy steel bodies. Sleeve type construction employing replaceable hardened stainless seat sleeve insert in valve body, maintains alignment of valve stem and seats at all times, says manufacturer. Valves offered in two and three way types in ½ through 3 in. Valve diaphragm operating air pressure is 35 to 40 psi.

Liquid Valve . . .

. . . designed for remote control operation—*Gemco Inc., Dept. HPAC, P. O. Drawer 3908, Shaker Square Sta., Cleveland 20.*



Heavy-duty liquid valve has mechanism that immediately closes valve at power failure. Other design features: torque-type motor arranged to operate to a stall in both open and closed positions; floating bronze valve ball, hard chrome plated to resist scratching, pitting and abrasion; resilient, synthetic rubber seat that is wiped clean each time valve is opened or closed. Round port area does not change water stream shape as it passes through valve. Positive seating said to result from full stream pressure applied against ball whenever closed. "Model MV-1000" is for 3 in. pipe; "Model MV-2000" is for 4 in. pipe.

Sump Pumps . . .

. . . equipped with base, impeller guaranteed for life against rust, corrosion—*Bruner Corp., Dept. HPAC,*

arkos DIRECT FIRED HEATERS

. . . *engineered for industry* . . .

FOR FACTORIES • CHURCHES
• WAREHOUSES • INSTITUTIONS
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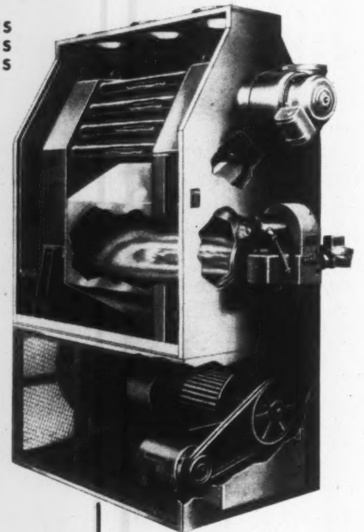
Here at last is the direct-fired heater long demanded by the industry.

Arkos Heaters are the direct result of a long development program initiated by combustion engineers with recognized backgrounds in the pioneering of direct-fired heating and make-up air for industrial, institutional and commercial applications. Arkos Heaters are available for floor, inverted, or horizontal mounting, and are designed for burning oil, gas or combination fuels. Capacities range from 120,000 to 3,500,000 BTU output.

Why accept less than the best when your analysis and evaluation will substantiate the plus features of Arkos Heaters?

Complete information forwarded immediately upon request.



- **Floating combustion chamber** with full allowance for contraction and expansion during normal cycling of the heater. This is accomplished by the pins riding in slotted grooves.
- **14 gauge stainless steel combustion chamber,** heliarc welded to insure longevity. Combustion chamber and heat exchanger carry a ten-year warranty.
- **Life-time sealed main blower bearings** require no lubrication.
- **Integrated control panel,** according protection to combustion controls from air-borne contaminates.
- **Internal radiation shields,** eliminate blanket insulation breakdown while reinforcing outer casing, and keeps outer casing temperature to within 4° of room temperature.
- **Hexagonal shape combustion chamber** provides maximum cross-sectional area and combustion volume and forms a strong structural shape for the combustion chamber.
- All burners are of the **power rated type** whether gas, oil, or combination, with a combustion air blower as an integral part of the burner itself.

arkos MANUFACTURING COMPANY
7310 woodward avenue detroit 2, michigan

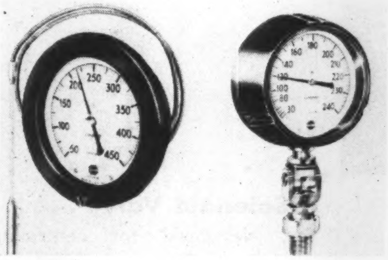
. . . *want to know more? just send a postcard*

EQUIPMENT DEVELOPMENTS

Continued

4763 *N. 32nd St., Milwaukee, Wis.*

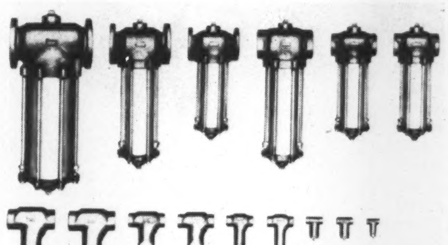
Column and submersible pumps have phenolic base coating said to be impervious to rust, corrosion, acids, soaps, oils, etc. Impeller is of molded polyethylene. Flat control is flexible, leakproof, corrosionproof. Submersible model is floodproof, operates under water without damage.



Dial Thermometers . . .

. . . developed for measuring temperatures in range of −350 to 1000 F—*U. S. Gauge, Div. of American Machine and Metals, Inc., Dept. HPAC, Sellersville, Pa.*

"Supertherm" dial thermometers available in remote reading models (above, left) and direct reading models (above, right). Remote reading models employ conventional armored capillary tubing to connect sensing bulb to dial indicator up to 125 ft away. Direct reading model available in rigid stem type and "Multi-Angle" type with swivel mounting head. Four filling mediums offered: vapor, gas, mercury, and organic liquid. Bulb materials include copper, brass, 347 and 316 stainless steel. Dial sizes: 3½, 4½, 6, 8½ in.



Pipeline Strainers . . .

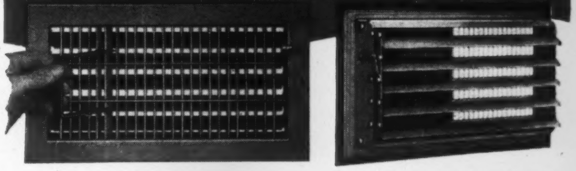
. . . designed with heavy outside screen to protect against surge and bursting; fine-mesh inside screen for straining—*Spraying Systems Co., Dept. HPAC, 3219 Randolph St., Bellwood, Ill.*

Strainers supplied in wide range of threaded pipe connection sizes ¼ to 4 in. and with flanged connections for 3, 4, and 6 in. pipe sizes. Available in stainless steel, brass, cast iron. Strainer can take up to 75 percent blocking with less than ½ lb pressure drop under normal flow conditions says manufacturer. Larger capacity strainers equipped with top outlet for gage mounting.

DIRECTED AIR FLOW at any angle with

INDEPENDENT "Fabrikated" AIR CONDITIONING REGISTERS

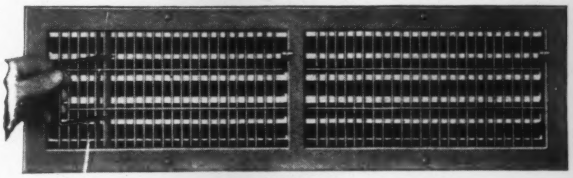
REG. U. S. PAT. OFFICE



321-A HMV

Rear View Showing "HMV" Valves

Every grille bar adjustable individually—before or after installation



321-A HMV Tandem

Any direction of air flow—right, left, up, down and any combination—is easily obtained with "Fabrikated" Style No. 321-A HMV air conditioning registers, for residence or commercial installations, on sidewalls or ceiling. The face bars are adjustable to right or left; valves on the back are adjustable to direct the air flow up or down; valves may also be fully closed, and are connected to open or close in unison.

The angles of deflection and the combinations to be had are practically unlimited. Adjustments for directed air flow may be made before or after installation. Grille bars are held firmly in place and will not vibrate or rattle. "Fabrikated" registers are available in sizes from 8 x 4" to 48 x 24", including tandem style. Special sizes can be made without special die set-up charges.

Write for Catalog.

Visit us at International Heating and Air Conditioning Exposition — Booth #701

THE INDEPENDENT REGISTER CO.

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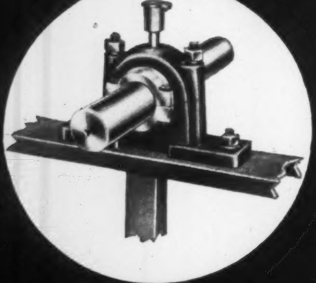
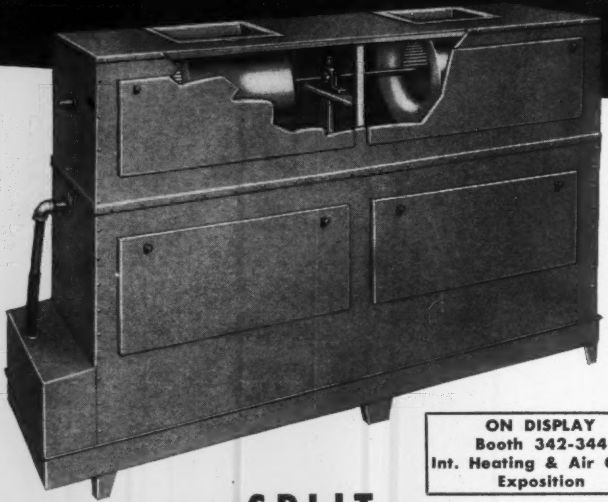
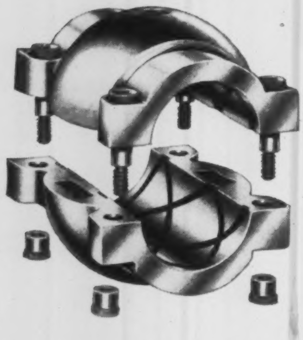
NEW
FAST-SIMPLE
and EASY WAY
to replace
INTERMEDIATE BEARINGS





ON DISPLAY
Booth 342-344
Int. Heating & Air Cond.
Exposition

NEW SPLIT SLEEVE BEARING
CUTS REPLACEMENT COSTS AT LEAST 75%



ENDS SHAFT REMOVAL

This revolutionary new bearing introduces an unbelievable economy factor to industrial maintenance. Mounting is accomplished in a *fraction* of the time required for conventional solid bearings! The split feature permits mounting at any intermediate position on the shaft — *without* removing the shaft or disassembling the unit — and cuts installation time and costs because it allows for easy bearing replacement. This unit provides invaluable protection to manufacturers who offer warranty period replacement service.

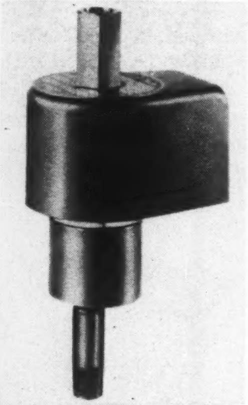
AVAILABLE IN POPULAR SHAFT SIZES FROM 1 3/16" TO 3 3/16" THROUGH AUTHORIZED DISTRIBUTORS— (SEE YOUR YELLOW PAGES)

Write for
Supplement C of Catalog No. 57
for full details.

Randall

RANDALL GRAPHITE BEARINGS, INC.
LIMA, OHIO

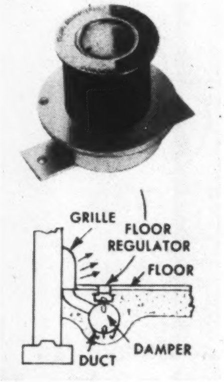
EQUIPMENT DEVELOPMENTS
Continued



Solenoid Valve . . .

. . .developed for controlling air, gases to 2500 psi and liquids to 1800 psi—*Automatic Switch Co., Dept. HPAC, Florham Park, N. J.*

High pressure, two-way packless solenoid valve has valve body, operating parts of stainless steel. "GV60-565" suitable for low temperature, high pressure applications. Available in variety of enclosures with 1/4 in. NPT connections and standard, threaded, or electrical connections.



Damper Regulator . . .

. . .designed for perimeter heating and air conditioning—*Young Regulator Co., Dept. HPAC,* 20910 *Miles Ave., Cleveland* 28.

Regulator installed in branch duct near diffuser to give accurate control of air volume in branch duct. "No. 330" regulator has brass covered plate 2-3/8 in. diam which can be screwed down flush with floor.

Curtis

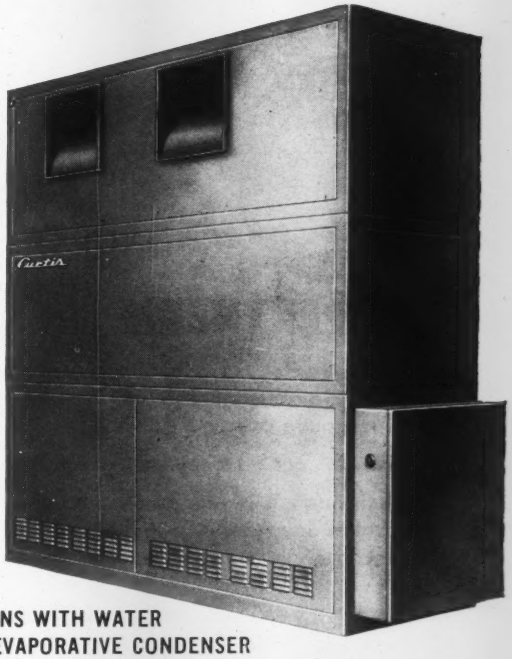
PACKAGED AIR CONDITIONING

INSTALLATION EASIER: Line assembled at the factory —eliminates expensive field labor.

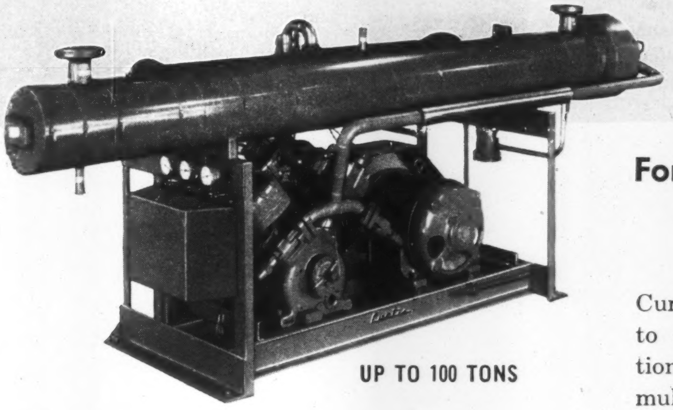
PERFORMANCE KNOWN: Curtis units are run-in at the factory and guaranteed to deliver their rated tonnage. Assures a BALANCED SYSTEM.

SUPERIOR EQUIPMENT: Long life, quiet, trouble free, economical operation.

DELIVERY ON TIME: Curtis can meet your delivery requirements, a decided advantage over multiple supplier delivery promises!



UP TO 100 TONS WITH WATER
COOLED OR EVAPORATIVE CONDENSER



UP TO 100 TONS

PACKAGED LIQUID CHILLERS

For Air Conditioning
Process Cooling
Refrigeration

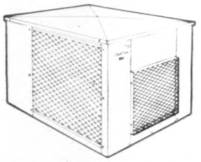
Curtis packaged liquid chiller lends itself to a widely diversified field of applications—air conditioning, refrigeration and a multitude of process cooling procedures. Available in capacities up to 100 tons.

REMEMBER, you can count on

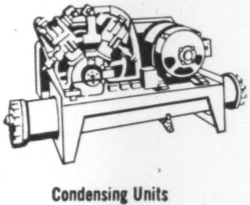
Curtis

OUR 104TH YEAR
MANUFACTURING COMPANY • REFRIGERATION DIVISION
1950 **Kienlen Ave., St. Louis 20, Mo.**

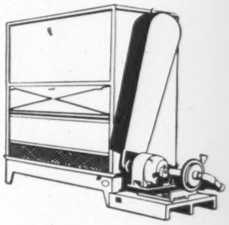
VISIT BOOTH 802
Heating & Air Conditioning Exposition
PHILADELPHIA
Jan. 26-29, 1959
•
See our newly designed packaged air conditioners and liquid chillers



Air Cooled Air Conditioning Units, 3-5-7½ tons. Residential and commercial application.



Condensing Units up to 100 tons.



Cooling towers and evaporating condensers, air handling units to match.

C-33

NEW
FROM U.S. GAUGE

SUPERTHERM dial thermometers

Engineered . . . to equal the premium quality and dependable performance of superior USG Grade AA Supergauge pressure gauges.

Priced . . . at a money-saving value that's news in itself.

Designed . . . in a range of styles and sizes to serve any plant in any industry with the *most comprehensive line of indicating thermometers available from one source today!*

NOW all your requirements for standard, filled system dial thermometers met with one top grade line that features all these specifications. See your USG distributor, or write for Catalog 205.

DIRECT READING—rigid, direct mounting; or "Multi-Angle" type

REMOTE READING—for temperature measurement up to 125 feet from indicator

4 TYPES OF FILLS—organic liquid, gas, vapor, mercury

ALL COMPENSATIONS—complete selection of case or capillary compensation available as required

29 STANDARD RANGES—covering temperatures from −350° to +1000°F

2 CASE MATERIALS—anodized aluminum or phenolic plastic

4 CASE SIZES—3½", 4½", 6" and 8½"

3 CASE STYLES—turret, front flange, or back flange mounting, with choice of bezel

FULL SELECTION OF BULBS—virtually endless combinations of bulb sizes, shapes, materials, and connections.

Find Your Nearest Distributor in The 'Yellow Pages'

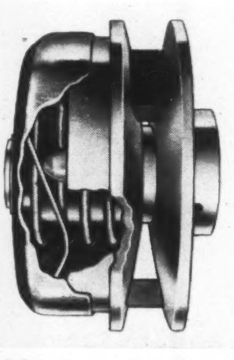
UNITED STATES GAUGE USG
Division of American Machine and Metals, Inc. • Sellersville, Pa.

WET
12 DRY
22 DRY

Sight Glass . . .

. . . intended to extend life of moisture indicating elements indefinitely— *Refrigeration Products Div., Ansul Chemical Co., Dept. HPAC, Marinette, Wis.*

Life of indicating elements extended by pad and filter feature, protecting them from constant flow of Refrigerants 12 and 22. Particles of circulating solids collected by filter. Full view sight glass area retained by relocating moisture indicating elements across bottom third of sight glass.



Variable Speed Pulleys . . .

. . . developed to give constant speed with wide load variations—*Lovejoy Flexible Coupling Co., Dept. HPAC. 4949 W. Lake St., Chicago 44.*

Cam automatically maintains required belt tension for given load. preventing pulley faces from spreading and at the same time holding

Announcing **a new book of utmost value to Designers and Users of Atmospheric Heat Exchange Equipment**

"EVALUATED WEATHER DATA FOR COOLING EQUIPMENT DESIGN"

This book is an evaluated summary of 10 million summer hourly observations spanning 10 years at over 400 official United States, Canadian, and Mexican weather stations.

Staff-prepared by recognized authorities, it presents in text, table and map form the 1%, 5% and 15% design levels of wet bulb temperatures at each weather station. Other values presented include dry bulb temperatures, and wind speeds and directions coincident with the high wet bulb temperatures.

"Evaluated Weather Data for Cooling Equipment Design" is the most complete and up-to-date weather data manual ever presented to designers and users of atmospheric heat exchange equipment.

Typical of Data Presented in Chapter and Section Form—

TEMPERATURE VARIATIONS:

Daily variations; Monthly variations of wet bulb temperatures; Annual climatic ranges of wet bulb temperatures; Typical "hot spell" weather sequences.

WET BULB DESIGN VALUES:

Pertinent considerations; Wet bulb temperature tabulations at 3 design levels; Iso-line maps of wet bulb temperature frequency (1%, 5% and 15% design levels); Temperature differences associated with various frequency levels.

COINCIDENT DRY BULB VALUES WITH HIGH WET BULB VALUES:

Tabulation procedure; Coincident patterns on psychrometric charts (49 cities).

WINDS RELATED TO HIGH WET BULB TEMPERATURES:

Velocity changes with height above ground; Daily changes in wind; Upslope and downslope winds; Sea and lake breezes; Winds coincident with high wet bulb temperatures; Determinations of predominant directions; Ranges of velocity; Cooling tower orientation.

DRY BULB DESIGN VALUES:

Frequency of occurrence; Estimating frequency points.

INTERPOLATION BETWEEN STATIONS:

Variation in wet bulb due to elevation; Variation in dry bulb due to elevation; Variation in atmospheric pressure; Air mass modification; Influence of terrain and adjacent operations; Solar radiation; Influence of vegetation; Examples.

$35.00
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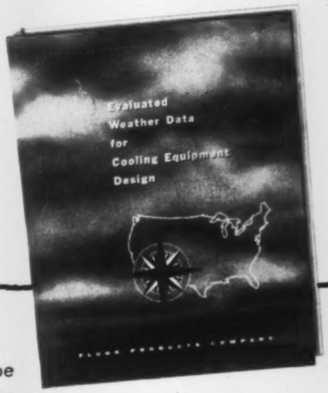
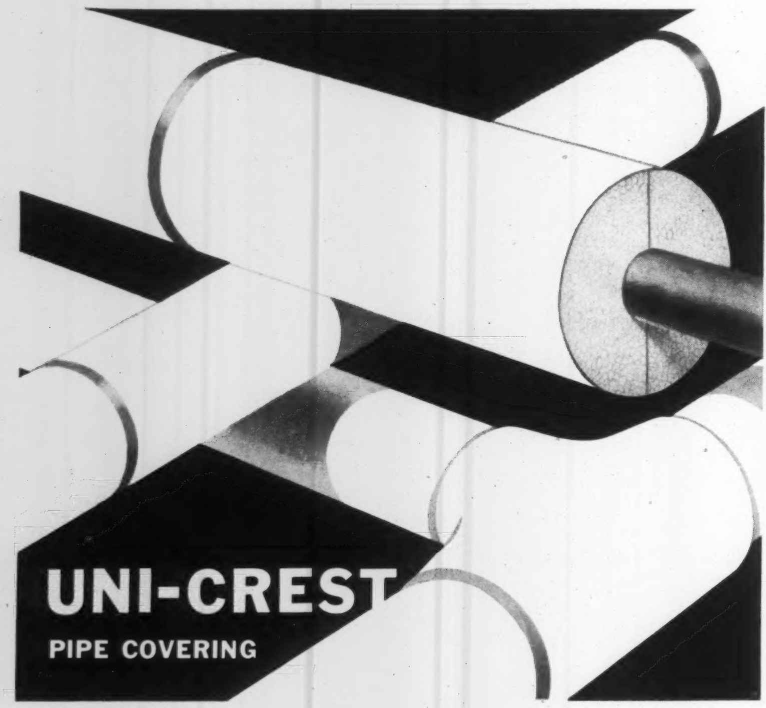


Copies of "Evaluated Weather Data for Cooling Equipment Design" will be available beginning December 1, 1958, through the Fluor Representative in your area. Or, write direct to Fluor Products Company, Department DEW, Whittier, California.

FLUOR PRODUCTS COMPANY
A DIVISION OF THE FLUOR CORPORATION, LTD.
WHITTIER, CALIFORNIA



a new, economical, low temperature insulation

Uni-Crest, pipe covering, is an excellent low temperature insulating material, and is inexpensive to install and maintain.

Uni-Crest's low thermal conductivity (K factor), plus its high resistance to water and water vapor—are some of its prime qualities. It will not rot, mildew, or support fungus growth.

Extremely lightweight, with a smooth, tough white surface, Uni-Crest is non-dusting, non-flaking, and easily cut and handled on the job. And Uni-Crest is inexpensive, too.

For the address of the office nearest you, plus additional information about Uni-Crest pipe covering and an actual sample, please write to the address below.

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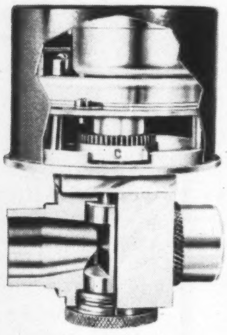
Since 1907
UNITED'S UNI-CREST EXPANDED POLYSTYRENE
1 Central Avenue, Kearny, New Jersey

BRANCH OFFICES OR APPROVED DISTRIBUTORS IN ALL KEY CITIES

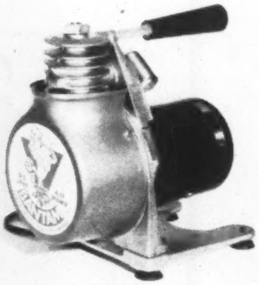
pitch diameter at desired setting. "Hi-Lo FHP" pulleys available in three hp ratings: ½, ¾, 1 hp at 1750 rpm. Smallest unit available with high impact plastic or cast iron face; other sizes are cast iron. Speed ratios vary from 2 to 1 for the ½ and ¾ hp models to 2½ to 1 for the 1 hp model.



Motorized Valve . . .

. . . developed to operate on low voltage upon signal from its own thermostat—*Regent Engineering Co., Dept. HPAC, 336 Potter Rds., Wood Dale, Ill.*

Motorized zone control valve provides for automatic multiple zone control on new or existing hot water heating system. Slow cycle of operation. Draws no current in open or closed position. Available in ¾, 1, and 1¼ in.

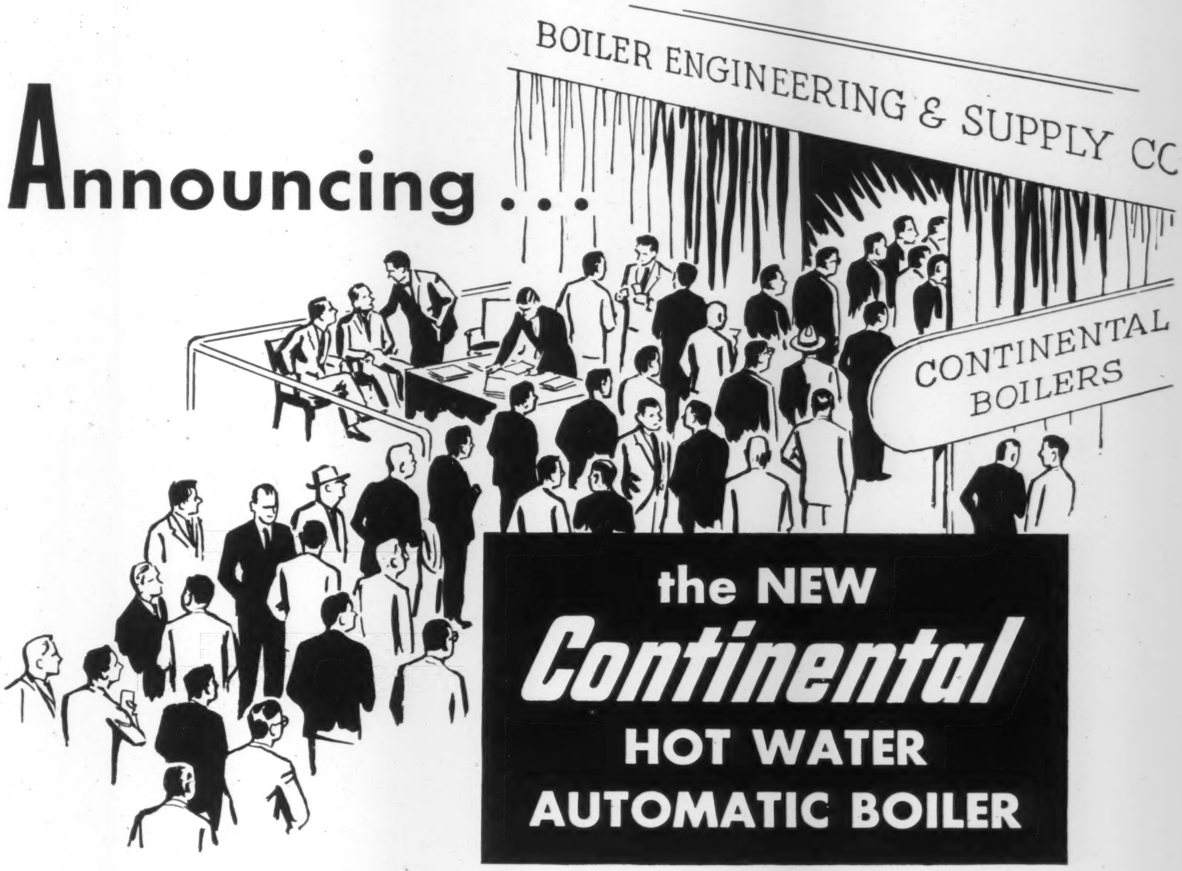


Portable Air Compressor

. . . requiring minimum of maintenance—*Lee Mfg. Co., Dept. HPAC, 226 W. 22nd St., Hialeah, Fla.*

With no diaphragm to change, "Bantam" compressor provides small volume air at low or high pressure

Announcing . . .



the NEW Continental HOT WATER AUTOMATIC BOILER

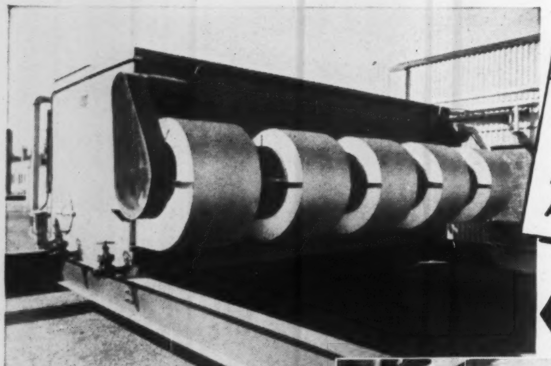
Shown for the first time at the ASHAE Show in Philadelphia January 26-29

Here is a completely new approach to Hot Water Boiler design. Continental gives you all the features you want for efficiency . . . for economy . . . for low maintenance costs. Check these performance advantages:

- ☆ In the history of package boilers, there has never been a single case of damage due to "thermal shock" with the Continental Boiler.
- ☆ Operates at high or low water differential temperatures . . . at high or low rates of water circulation . . . responds rapidly to temperature controls.
- ☆ May be used for either direct or reverse flow.
- ☆ Has internal expansion space to cushion the dynamic surge of circulators and eliminate entrapped air from system water.

For complete engineering data on the new Continental Hot Water Automatic Boiler, see the Continental representative or write for Bulletin BE-200.

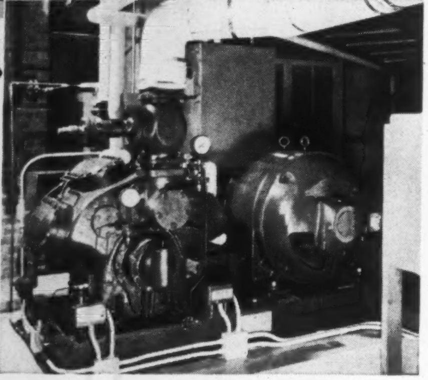
BOILER ENGINEERING & SUPPLY CO., INC.
Phoenixville, Pa.



Vilter Report Card

Grade	Service Record
A	Efficient, alternating zone-load operation.
A	Exceptionally low operational cost.
A	Uninterrupted air conditioning service.
A	Smooth operation with minimum maintenance.

View of the Vilter VXF evaporative condenser located on the roof just outside the compressor room.



View of one of the two Vilter 8-cylinder VMC Freon compressors with a 100 h.p., 1175 r.p.m., part winding motor drive. These compressors are located on an upper floor, above an office.

Cool Thinking ... Cool Fun in Marquette University's Air Conditioned Brooks Memorial Union

Brooks Memorial Union is the hub of many Marquette University activities—professional meetings and conferences attracting a national audience, exciting school dances, excellent food facilities in the cafeteria, snack bar and private dining rooms. One key to its year-'round popularity and usefulness is the air conditioned comfort provided by the Vilter installation on this Milwaukee Campus.

To provide adequate air conditioning on a conservative appropriation and to minimize yearly operating expenses, the system was laid out to provide alternating zone-load cooling based on a "traffic flow" and usage pattern. During normal occupancy the entire Union is cooled. However, at peak loads only part of the conditioned space in Brooks Memorial is cooled at one time. As the peak occupancy load shifts from cafeteria and grill to the ballroom-conference room, the air conditioning is also shifted. Results of operating in this manner have been highly satisfactory.

Vilter equipment furnished on this job included two 8-cylinder VMC compressors; VXF Freon evaporative condenser; Freon liquid receiver; heat exchanger, cooling coils, motors, and controls.

"Very satisfactory performance with only routine maintenance," is the praiseworthy comment by Marquette University officials.

Let Vilter help you with your air conditioning and refrigeration requirements.

Write for these helpful bulletins to: The Vilter Manufacturing Company Dept. F-804, 2217 S. First Street, Milwaukee 7, Wisconsin

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Bulletin 820
Vilter VMC
Freon
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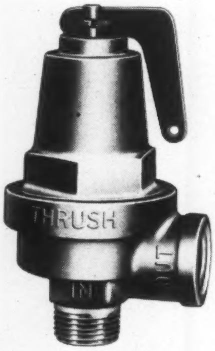
REFRIGERATION and AIR CONDITIONING

THE VILTER MANUFACTURING COMPANY, Milwaukee 7, Wisconsin

Air Units • Ammonia & Freon Compressors • Booster Compressors • Baudelot Coolers • Water & Brine Coolers • Blast Freezers • Evaporative & Shell & Tube Condensers • Pipe Coils • Valves & Fittings • Pakice & Polarflake Ice Machines

with little maintenance required. Pump is portable—9 × 5 × 8 in. and 10½ lb. Unit may be incorporated into existing installations and mounted in any position, says manufacturer.



Pressure Relief Valve . . .

. . . in both low pressure and high pressure settings—*H. A. Thrush & Co., Dept. HPAC, Peru, Ind.*

"No. 39" without lever and "No. 39L" with lever are 30 psi valves for hot water space heating systems. "39H" without lever and "No. 39-HL" with lever furnished with settings of 45 to 150 psi for small commercial systems. Inlet, outlet connections are ½ in.

"FREON-12"
FREON
"FREON-12"

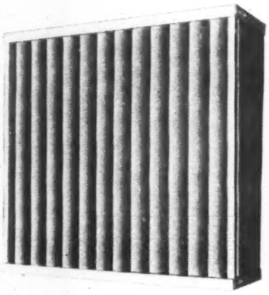
Charging Manifold . . .

. . . designed for use with packaged refrigerants—*Refrigeration Products Div., Ansul Chemical Co., Dept. HP-AC, Marinette, Wis.*

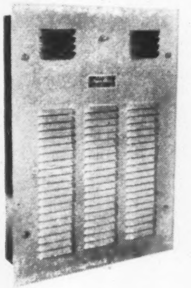
Manifold has three-way valve and coupling arrangement permitting use of one, two, or three cans of refriger-

Activated charcoal purification equipment

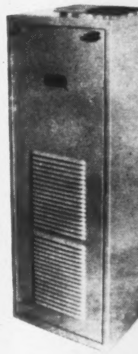
Barnebey-Cheney manufactures activated charcoal and purification equipment for air, water and chemical products. Used in air purification, AC saves on heating-cooling costs by permitting recirculation of air. AC adsorbs odors, irritating vapors, smoke and smog. Completely revitalizes stale or stuffy air.



FilterFold adsorbers Pleated filter with ½ in. bed of charcoal. Installed in multiples, these cells give large air handling capacity in a small space. Each cell will handle up to 1,000 cfm at 0.2 wg. Heavy guage steel frames take rough treatment (stainless frames available). Five types available.

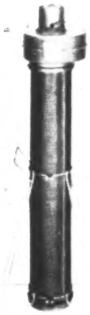


Wall unit Flush mounted circulator for semi-light duty use. Contains centrifugal fan, charcoal filter, and dust filter. Steel cover plate furnished with prime coat. Designed to fit between studding. Capacity: 150 cfm.

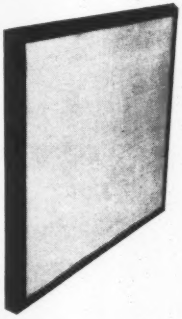


Cabinet circulators Complete units contain panel adsorbers, dust filter, centrifugal blower, and motor assembly. They are fully assembled, ready to plug in. Designed for long service and quiet operation 24 hours a day. They will purify up to 12,000 cubic feet of space.

Heavy duty units are available for warehouse or industrial operation. These may be ceiling mounted or portable.



Canister circulators Complete unit contains removable canister and blower-motor assembly. Designed for small rooms and enclosed areas. Four models, with capacities from 15 to 120 cfm. Either floor stands or wall mounting available.



Panel adsorbers Flat perforated metal cell with 1 in. bed of activated charcoal. Use it when the contaminant load is heavy and you want long service life. Frame assemblies and panels are available for any air flow. Capacities up to 180 cfm at 0.3 wg. Three models.

Canister adsorbers Cylindrical perforated metal with ⅜ in. to ¾ in. bed of charcoal. Use these for small jobs and for expansion of existing installations. They are mounted in manifold plates in multiples, depending on cfm, and are interchangeable with other types of canisters. Four models.

Other products and services Disposable charcoal filters in paperboard frames are available for use in air conditioners, forced air furnaces, and ventilating systems. Breeze circulators are attractive units for homes, offices, clubs.

Barnebey-Cheney's complete line of activated charcoals is available in bulk.

Ask for free literature.

Cassady at Eighth, Columbus 19, Ohio
Los Angeles • San Antonio • St. Johns, Quebec

Barnebey
Cheney

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EVERLASTING VALVE CO. JERSEY CITY
EVERLASTING VALVE CO.

Less than ¼ turn opens or closes

When you need...

- Quick action
- Leak-Proof Seal
- Minimum Pressure Drop
- Straight-through full flow
- Valves that cannot wedge or jam
- Self-grinding rotating disc

Specify Everlasting Valves

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Everlasting VALVES for General Services
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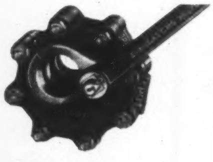
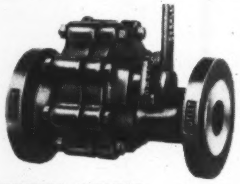
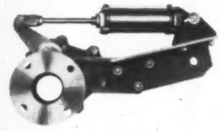
VISCOUS MATERIALS flow freely through EVERLASTING



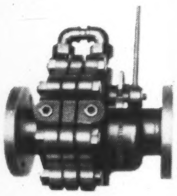
BOILER BLOW-OFF
Quick acting, also handwheel operated "Y" and angle types. For pressures up to 600 psi.



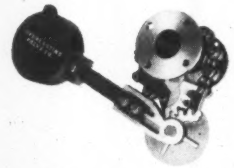
GENERAL SERVICE
Where drop-tight seal and full flow is essential.



CYLINDER OPERATED
Can be remotely controlled, electrically or manually.



STEAM JACKETED
Assures free flow of viscous materials.



WEIGHT-OPERATED
For automatic drains or emergency shut off.

Everlasting VALVES

EVERLASTING VALVE CO., 61 FISK STREET, JERSEY CITY 5, N. J.

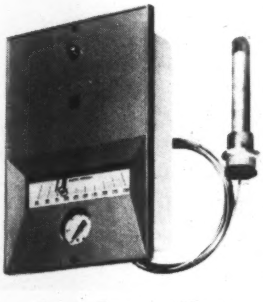
EV 408

ant. Included in kit are valve, coupling mechanism with charging hose. Any standard pressure gage can be inserted in place of plug at junction of charging hose and three couplings. Single units also available.

Plastic Gate Valves . . .

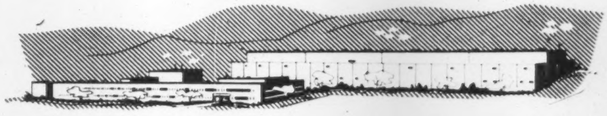
. . .in new, complete line—*Vanton Pump & Equipment Corp., Dept. HPAC,* 201 *Sweetland Ave., Hillside, N. J.*

Socket-weld "Flex-Plug" plastic gate valves said to combine features of straight-through, no pressure drop flow with close throttling control. With addition of socket-weld ends, plastic gate valves can be used in piping for chemical, pharmaceutical, other industries.

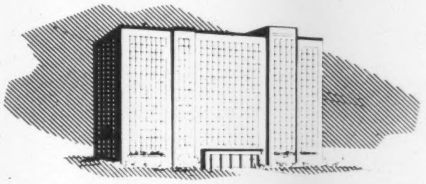


Indicating Controllers . . .

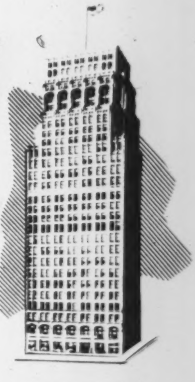
. . .available in three temperature and four pressure ranges—*Powers*



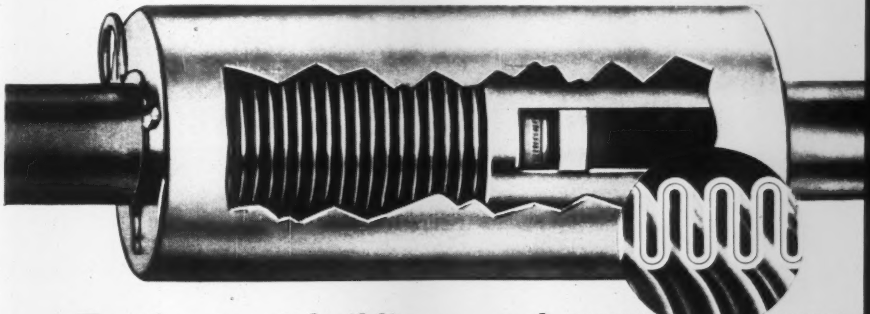
The Martin-Denver Company, Denver, Colorado



Stateway Gardens Apartments, Chicago, Illinois



Southwest Bell
Telephone Company
Kansas City, Missouri



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Flexon®

PACKLESS EXPANSION COMPENSATORS

The inside story
2-PLY CONSTRUCTION
The bellows is fabricated from two plies of specially-rolled metal for strength with flexibility. Bronze bellows for Model L; stainless steel for Model H.

All over the country, for the finest, most modern buildings, you'll find Flexon Expansion Compensators written into the heating specifications. Why? Simply because there's no substitute for their completely packless design, their easy installation, and the fact that they *never need maintenance!*

There's no easier or lower-cost way to take care of pipe and tubing expansion in mains, risers, and baseboard convector installations. A mechanic installs one in minutes; you can *forget it for the life of the building.*

Flexon Packless Expansion Compensators are the modern, low-cost way to absorb pipe motion, proved in thousands of installations. Why not write them into your next job? Write today for design and cost data, and the name of your Flexon representative.

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SEND FOR YOUR COPY OF THE COMPLETE FLEXON DESIGN GUIDE—TODAY

Everything you need to know about absorbing pipe motion, in a concise 28-page design guide. Write for a copy for your reference files.

EC-125

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offers the
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you need!

Only with Ramset, can you handle *all* the requirements for heavy-duty fastening to steel, concrete or masonry. "Job-fitted" fasteners and a wide variety of fixtures adapt the basic tool for any job. Simple one-hand operation makes Ramset the easiest-to-use powder-actuated fastening system, what's more, ease of operation makes it the most economical. Ramset assures you of the lowest in-place fastener costs, and a neater job, too . . . without drilling, plugging or chipping. No power lines or bulky equipment!

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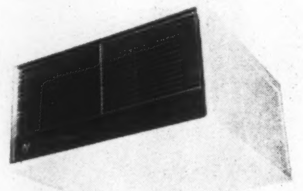
BEREA ROAD · CLEVELAND, OHIO

Regulator Co., Dept. HPAC, 3400 Oakton St., Skokie, Ill.

"Series 200" controllers used with diaphragm operated valves to give gradual regulation of temperature or pressure. Changes sensed by remote nitrogen-filled bulb connected by capillary to controller; for pressure control, pressure spiral element used. Control has 5-3/8 in. long indicating scale coupled with circle and pointer control index. Temperature ranges: —25 to 135 F; 25 to 250 F; 150 to 375 F. Pressure ranges: 30 in. mercury vacuum to 60 psi; zero to 100 psi; zero to 200 psi; zero to 350 psi.



Fan Coil Units . . .

. . . designed for commercial installation without ductwork—*Mathes Co., Div. of Glen Alden Corp., Dept. HPAC, 1501 E. Broadway Ave., Fort Worth 5, Tex.*

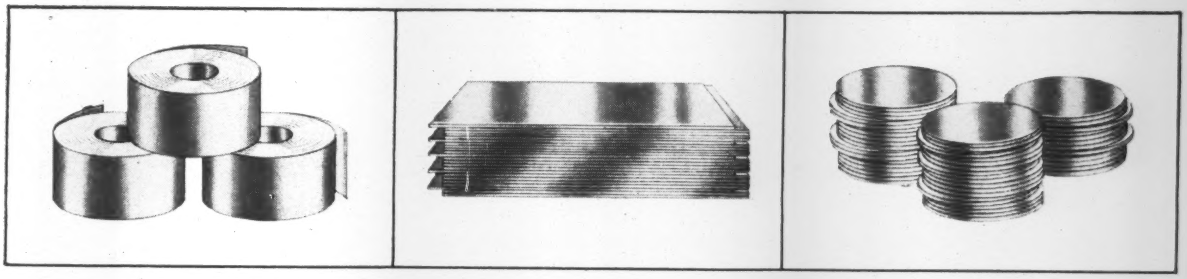
Newly designed line of evaporator fan coil units said to have compact design with low silhouette. Copper tube construction offered with aluminum fins. Cooling capacities range from 36,000 to 120,000 Btu per hr at air flow rates of 1350 to 4500 cfm, respectively.

Fastener Tool . . .

. . . designed to fasten light gage metal—*Ramset Fastening System, Olin Mathieson Chemical Corp., Dept. HPAC, 460 Park Ave., New York 22.*

"Skrew-Set" is combination hammer tool and drill holder. Point of tool is driven through material and fastener is tightened by turning tool. Suggested applications: predrilled straps to air ducts; temperature control tubing clips to sides of equipment; metal baseboards.

If you use aluminum sheet in any form, specify **Fairmont** to get the maximum



Deep-Drawing Superiority • Versatility • Utility!

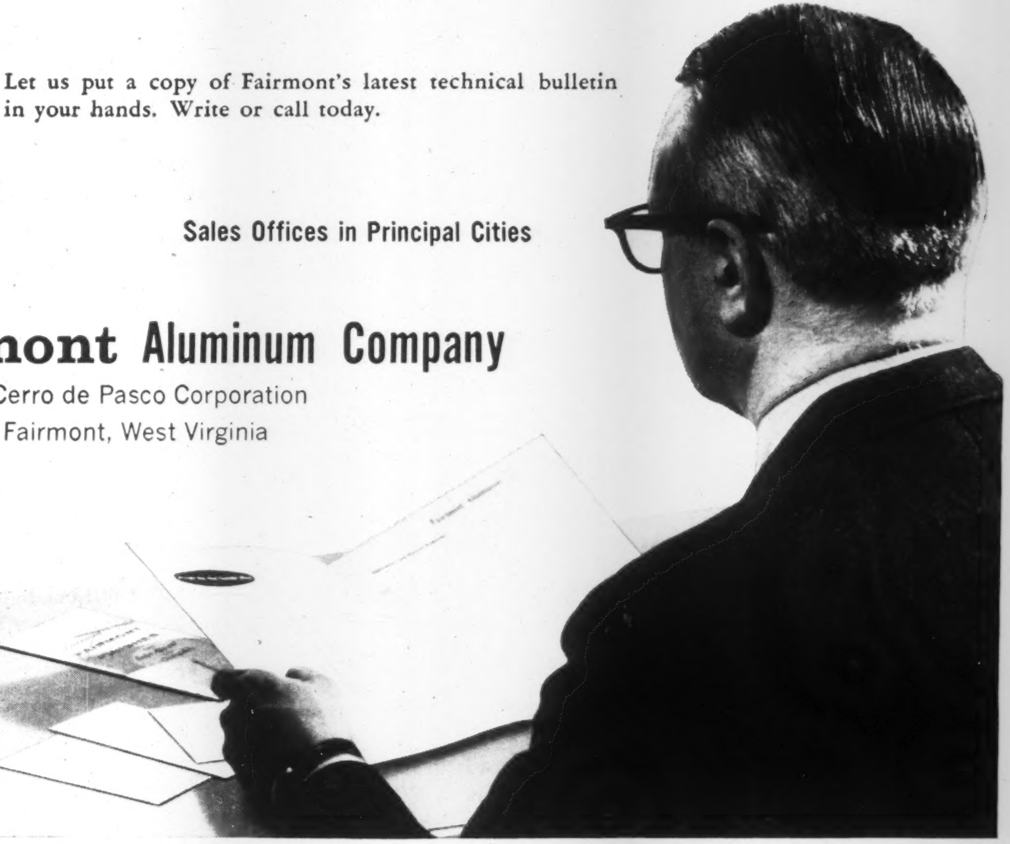
Fairmont wrought aluminum sheet not only meets the standards but exceeds them in mechanical qualifications. Excellent drawing quality, superior finishing and non-earing properties (vitally important to the manufacturer but not definitively qualified in the specification standards) are outstanding examples of Fairmont's superiority. Close adherence to required gauge tolerances is vitally important, since aluminum is bought on a poundage basis.

It is important to you, the purchaser, that every alloy Fairmont makes is rolled every working day.

This affords customers less lead time between ordering and shipment—helps keep inventories low, reducing investment in floor space and work in process. It permits fabricators' change orders to be executed rapidly and economically, if necessary.

And Fairmont's personal attention to orders, both large and small, guarantees maximum satisfaction.

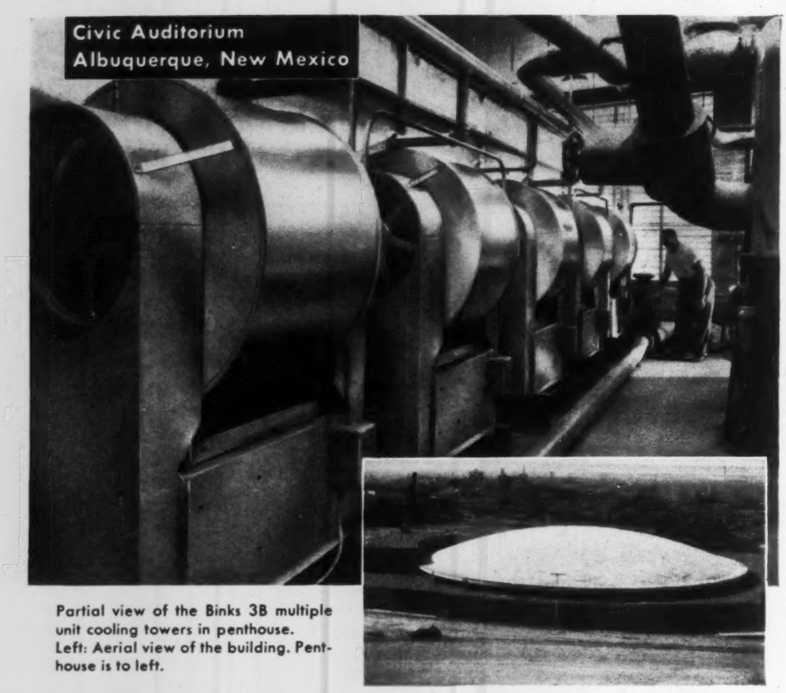
Let us put a copy of Fairmont's latest technical bulletin in your hands. Write or call today.



Sales Offices in Principal Cities

Fairmont Aluminum Company

Subsidiary of Cerro de Pasco Corporation
Dept. H-5 • Fairmont, West Virginia



Partial view of the Binks 3B multiple unit cooling towers in penthouse.
Left: Aerial view of the building. Penthouse is to left.

COMPACT, QUIET, EFFICIENT...

Binks cooling towers solve 3 problems

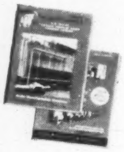
"Space was at a premium, noise could not be tolerated, and cooling load demands varied greatly." These were the cooling tower selection problems faced by Dr. Marcello Giomi, consulting engineer on the Civic Auditorium in Albuquerque, New Mexico.

All cooling equipment in penthouse. Clean architectural lines of the building made it essential to house all cooling equipment within the basic structure. The compactness of the Binks 3B series cooling towers made sense.

Towers right next to audience. Only a few feet separate the towers from the audience. The squirrel cage blowers and dynamic and static balanced moving parts operate almost silently . . . cannot be heard even during the hushed quiet of a violin concert.

Handle all cooling loads. Variable outside temperatures and audience size meant designing for many cooling loads. Independent blower operation and scientifically balanced air-to-water ratios provide complete load-matching flexibility and highest cooling efficiency under all conditions.

Send for free bulletins. Learn all the many design and operating features of Binks cooling towers. Ask your nearest Binks Branch Office, or write direct, for a copy of Bulletins 477-A and 333. Binks engineers will be glad to answer your questions and help solve your particular cooling problems. There is no obligation.



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Binks
EVERYTHING FOR
WATER COOLING

VISIT BOOTH 35

14th International Heating and Air Conditioning Exposition
January 26-29, 1959
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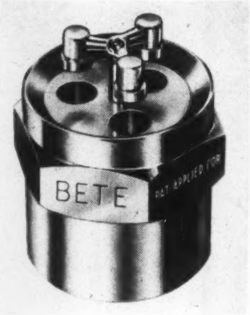
EQUIPMENT DEVELOPMENTS

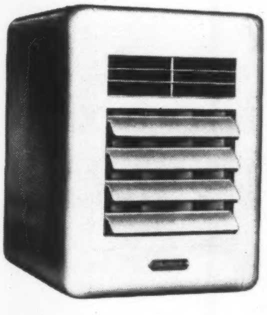
Continued



Nozzles . . .

. . . designed to give fine breakup and non-clogging action—*Bete Fog Nozzle, Inc., Dept. HPAC, 309 Wells St., Greenfield, Mass.*

"K" series nozzles employ three separate orifices; from each a jet impinges on a deflector plate. Here jets are broken up and intermingled to form full-cone spray. Absence of internal parts said to make nozzles non-clogging. Low turbulence, high nozzle efficiency, fine breakup result from straight through flow, says manufacturer. Made in seven standard models from 1½ to 8 in. pipe size, units cover flow rate range 20 to 3000 gpm. Available in cast iron, bronze, stainless steel with deflector plates in hardened steel, stainless steel, monel, other materials.



Gas Burners. . .

. . . rated from 70,000 to 700,000 Btu per hr—*Hastings Air Control, Inc., Dept. HPAC, 3215 Leavenworth St., Omaha 5.*

Burners guaranteed by manufacturer against backlash, pulsation, pilot outage, even under adverse conditions. Features cited include: primary air adjustment; air switch to

GROUNDED . . . FOR LACK OF STEEL PIPE SNOW MELTING!

At airports all through the snow belt it was the same story last winter . . . plane traffic delayed or suspended altogether until runways could be cleared of heavy snow.

Many engineers believe that in the jet age the only practical solution to airport snow removal problems will be found in *steel pipe* snow and ice melting systems for runways, loading areas and hangar approaches. Otherwise, these 10-mile-a-minute airplanes will simply "hurry up to wait."

Steel pipe has a solid background of success in snow melting systems just as it does in radiant heating, fire sprinkler systems, vent and drainage lines, electrical conduit, refrigeration, structural use, gas, oil and water lines. It is the most widely used metal pipe in the world because it is the least expensive and the most versatile.

Photos show bulldozers clearing heavy snow at two large airports.

STEEL PIPE IS FIRST CHOICE

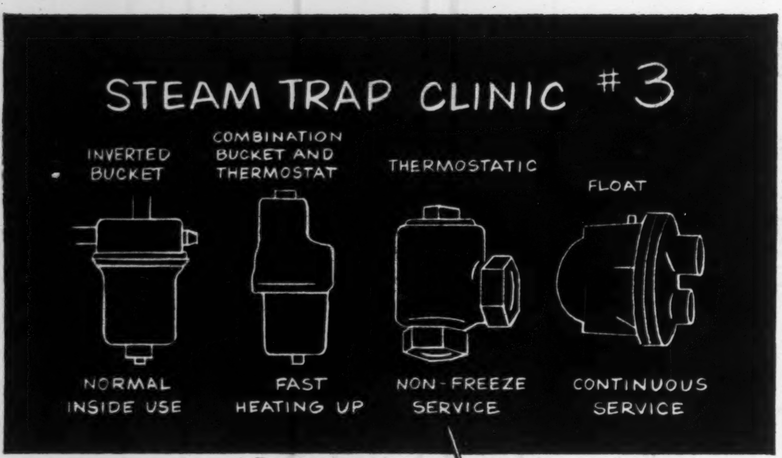
- Low cost with durability
- Strength unexcelled for safety
- Formable—bends readily
- Weldable—easily, strongly
- Threads smoothly, cleanly
- Sound joints, welded or coupled
- Grades, finishes for all purposes
- Available everywhere from stock

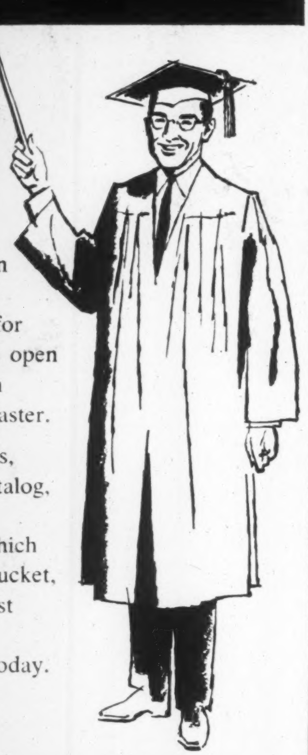
INSIST ON PIPE MADE IN U. S. A.

COMMITTEE ON STEEL PIPE RESEARCH

AMERICAN IRON AND STEEL INSTITUTE

150 East Forty-Second Street, New York 17, N. Y.





Which design of trap is best?

You can increase the heat from steam units as much as 35% by careful selection of the right design of trap. For example, although inverted bucket traps are best for most normal indoor uses, a combination open float and thermostatic trap permits steam units to reach maximum heat 2½ times faster.

For other sound design recommendations, send for Anderson's new engineering catalog, "How to Select Steam Traps and Fluid Specialties." This valuable booklet tells which of the four basic types of traps—inverted bucket, thermostatic, combination or float—is best for any installation. Send for your complimentary copy. Mail the coupon today.

ANDERSON SUPER-SILVERTOP STEAM TRAPS

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STEAM TRAP

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division of International Basic Economy Corporation
1949 West 96th Street • Cleveland 2, Ohio

Please send a copy of your new engineering booklet, "How to Select Steam Traps and Fluid Specialties."

Name __________ *Title* __________
Company __________
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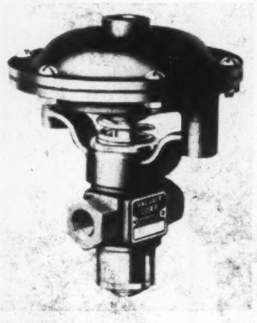
A TRAP FOR EVERY PURPOSE

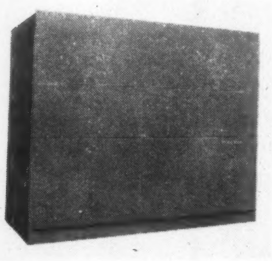
Visit Booth 616 at the 14th International Heating & Air Conditioning Exposition

delay opening of gas valve until blower comes to speed; plug-in type safety shutoff. Burners through 400,000 Btu per hr designed to convert oil or coal heating plants to natural, LP or mixed gas.



Diaphragm Valve . . .
. . . designed for actuation by any 3-way pilot valve, instrument control, cycle controller or process timer—*Valvair Corp., Div. of International Basic Economy Corp., Dept. HPAC, 454 Morgan Ave., Akron 11, Ohio.*

Diaphragm operated valves intended for use in air, oil, or vacuum circuits. Have neoprene covered synthetic fabric diaphragms for flexibility, resistance to oil and high bursting strength, says manufacturer. Valves designed for 20 to 60 psi air actuation, as well as 15 psi instrument operation, will handle intermittent actuation pressures to 125 psi.



Air Conditioners . . .
. . . in self-contained, water cooled design with 15, 30, 45, 60 and 75 ton capacities—*Typhoon Air Conditioning Co., Div. of Hupp Corp., Dept. HPAC, 505 Carroll St., Brooklyn 15, N. Y.*

B.A.C.

Introduces...

A New Concept in Cooling Towers

ADJUSTABLE CAPACITY

Flexi-Tower

- MORE CAPACITY
- INFINITE SELECTION

NDARDS

.. SEE IT AT BOOTH 1069 ... ASHAE SHOW ... PHILADELPHIA ..

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BALTIMORE AIRCOIL COMPANY, INC.

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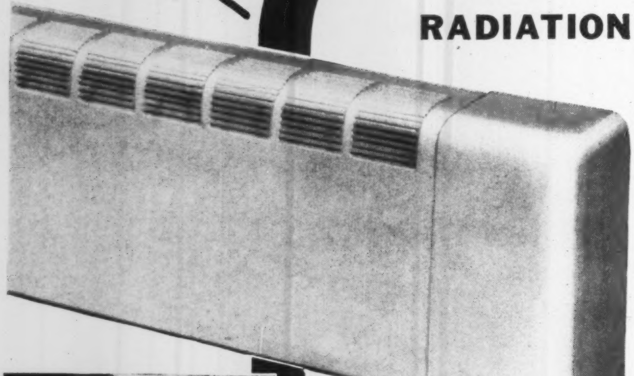
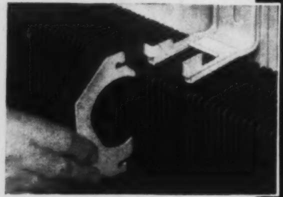
New
FEDDERS
Modernline

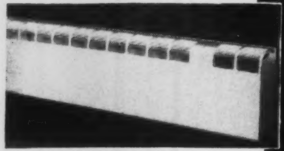
WALL
RADIATION





Reversible hanger handles all element sizes.

Locking joints reduce installation time.



Note smooth appearance on long runs.

NEW BEAUTY...
NEW EFFICIENCY

MODERNLINE DESIGN... new smoothly rounded enclosures introduce Modernline styling for commercial, industrial, institutional, and multiple housing buildings.

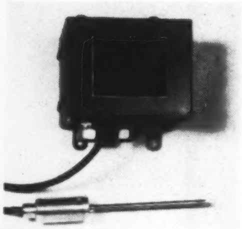
MODERNLINE Engineering... factory assembled backplate with adjustable expansion brackets... element hangers reversible for 1", 1¼", and 2" finned tubing.

MODERNLINE Installation Economy ... pre-assembly saves up to 50% on the job. Reinforced cover supported for full length by "V" type lip located ½" from wall for quick easy painting. Covers installed and removed without marring walls. Adjacent cover sections and end caps interlock for smooth appearance on long runs.

Write for new Modernline Catalog WRC-4

FEDDERS CORPORATION
Heating Division — Lalor and Hancock Sts., Trenton 7, N. J.
Also Unit Heaters, Fedair Remote Type Air Conditioners, Baseboard Radiation, Convectors

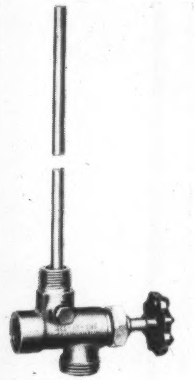
"Golden Anniversary Line" air conditioners incorporate three, four, and five 15 hp hermetic compressors, respectively. The 30 ton unit measures 84 × 45 × 92 and has a capacity of 364,000 Btu per hr. Larger units measure 120 × 45 × 103 in., have Btu per hr ratings of 558,000, 610,000, and 728,000. Steam heating coils available with all models.



Anemometer . . .

. . . added to company's instrument line—*Illinois Testing Laboratories, Inc., Dept. HPAC, 420 N. La Salle St., Chicago 10.*

"Air Velocity Transducer" provides millivolt output which is function of velocity. Output makes it suitable for indicating, recording, controlling, alarm, and other continuous read-out applications.



Tank Drain . . .

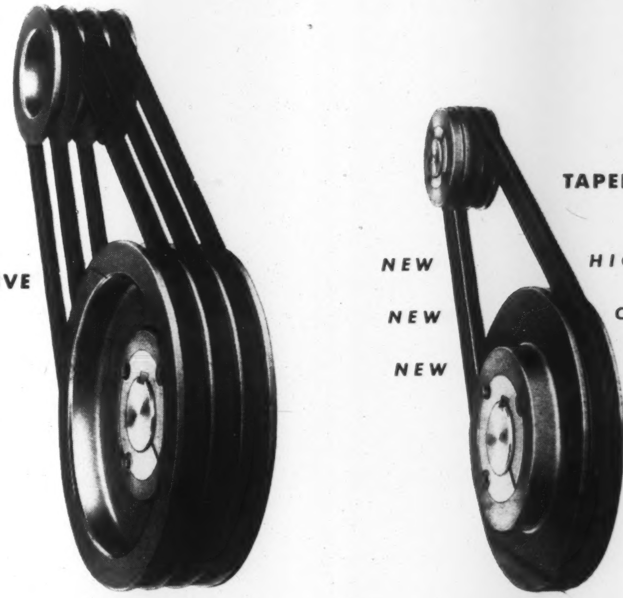
. . . in single unit—*H. A. Thrush & Co., Dept. HPAC, Peru, Ind.*

"No. 2" tank drain consists of shutoff valve, hose drain, air tube, and vent plug. When single handle is turned tight, tank line is open and drain is closed; when backed

Announcing

an entirely new line of
V-Belt Drives . . . . .

DODGE Dyna V



CONVENTIONAL TAPER-LOCK DRIVE

DYNA-V TAPER-LOCK DRIVE

NEW ***HIGH CAPACITY***
NEW ***COMPACTNESS***
NEW ***SAVINGS IN COST***

COMPARISON, ILLUSTRATED ABOVE — 3 HP, 1750 RPM, 2.41 TO 1 RATIO

	BELTS		SHEAVES			CENTER DIS-TANCE	HP	WEIGHT (LBS.)	COST	
	Number	Size	O.D. Driver	O.D. Driven	Width				Per hp	Per Drive
CONVENTIONAL TAPER-LOCK DRIVE	3	A42S	4.15"	8.95"	2½"	12.3"	4.62	24.7	$5.91	$27.38
DYNA-V TAPER-LOCK DRIVE	2	3V400	3.35"	8.00"	1 3/32"	10.8"	5.0	18.0	$4.50	$22.50
% SAVING *Savings vary with different sized drives*			**19%**	**10%**	**56%**	**12%**	+	**27%**	**23.8%**	**17.8%**

Dyna-V Drives are sensationally compact. They are capable of handling up to three times as much horsepower in a given space. Dyna-V opens vast new possibilities for better, more economical machine design. And, in most instances, *Dyna-V costs less!*

Narrower grooves, to match stronger, narrower Dyna-V Belts, greatly reduce the face width and the weight of Dyna-V Sheaves. Cost is lowered. Smaller diameter sheaves and shorter center distances multiply savings.

Dyna-V Sheaves decrease shaft overhang—increase bearing life. The new dimensional stability of Dyna-V Belts solves the problem of belt matching. Every belt carries its full share of the load.

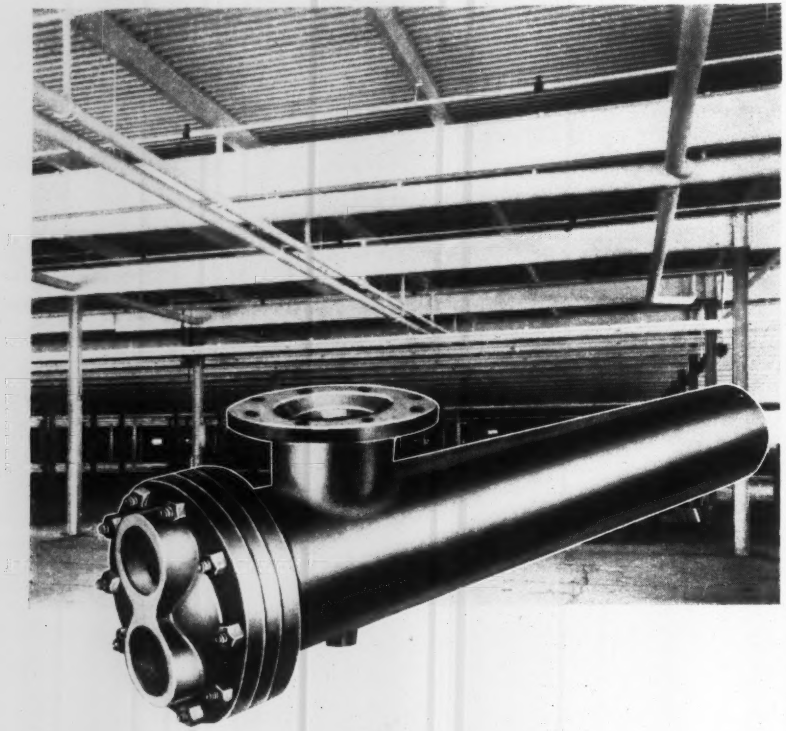
Dyna-V Drives will be available for capacities from 1 to 1500 hp. Ask your Dodge Distributor. Or write us for new Dyna-V Bulletin.

DODGE MANUFACTURING CORPORATION, 1600 Union St., Mishawaka, Indiana

DODGE
of Mishawaka, Ind.

CALL THE TRANSMISSIONEER—your local Dodge Distributor. Factory trained by Dodge, he can give you valuable help on new, cost-saving methods. Look in the *white* pages of your telephone directory for "Dodge Transmissioneer."

LARGE or SMALL . . .
General makes 'em all!



Cover your space heating requirements with a

GENERAL Application-Rated Converter!

From 1 to 1800 GPM . . . in 4" to 28" diameter sizes . . . there's a General Converter designed to suit your exact radiation or space heating requirements. The high efficiency, economy, and endurance built into each model results from General's continuous engineering research, years of manufacturing experience, and strict quality control procedures.

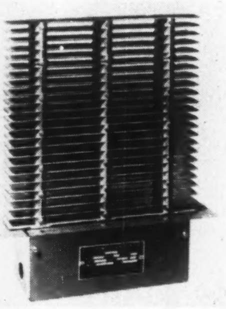
Selected for some of the country's largest installations, General Converters daily prove that progressive design, quality materials and manufacturing skills are the best ingredients for superior performance. General also produces a complete line of converters utilizing a hot water source. Request Bulletin 63A for full details.

GENERAL FITTINGS COMPANY
EAST GREENWICH · RHODE ISLAND

EQUIPMENT DEVELOPMENTS

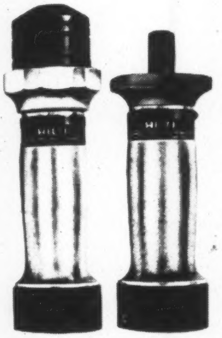
Continued

out, one seat shuts off tank line while other seat opens to hose drain. When vent plug is removed, air enters tank through tube and water drains. Only one tank tapping required.



Electric Duct Heater . . .
. . . designed for use with package air conditioning units, similar applications—*Electromode Div. of Commercial Controls Corp., Dept. HPAC, 570 Culver Rd., Rochester 3, N. Y.*

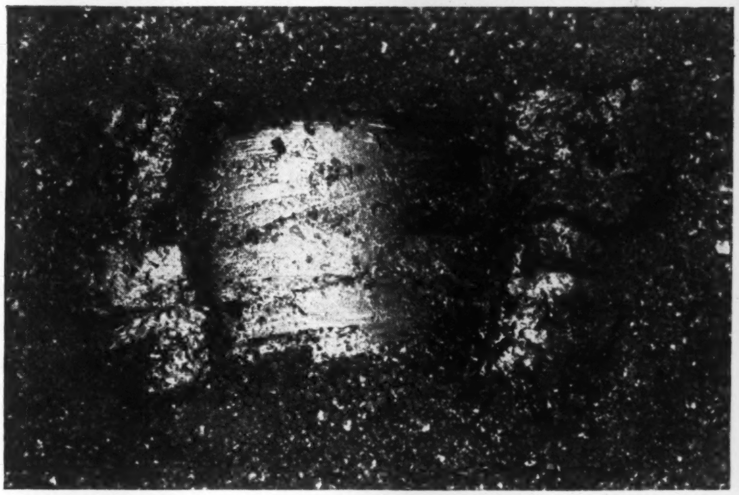
"Electric Insert Duct Heaters" unit consists of grid heating element mounted on heater gage steel outlet box. Grid is aluminum casting with fins on tubular heating element. Safety switch automatically breaks service to heater in case of stoppage of necessary air flow through heater. Made in two models: "DH-3" with capacity of 3 kw and "DH-5" with capacity of 5 kw. Both operate on 240 volts, single, or 3 phase.



Drive Tool . . .
. . . developed for use in heating, piping, and air conditioning installation applications—*Hilti Rapid Fastening*

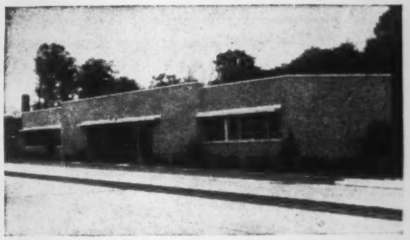
TRI-SUL-ITE

3-WAY PROTECTION SYSTEM

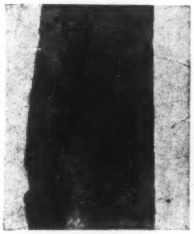


FOR UNDERGROUND HOT PIPES

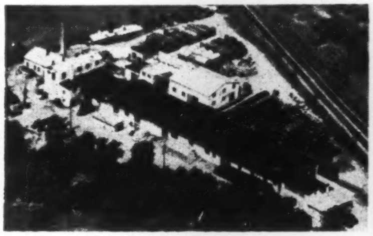
Tri-sul-ite, a specially selected gilsonite, is poured under and around all pipes in the trench. After proper curing, it forms three zones of protection against water, corrosion and heat loss. Above, close-up photo illustrates the plastic zone of Tri-sul-ite peeled back to show excellent adhesion for pipe protection.



Our new executive office building at Great Neck, N. Y.



One of our gilsonite veins in Utah.



Our plant at New Market, N. J.

Tri-sul-ite ready for shipment at Craig, Colo.

Gilsonite laboratory at New Market, N. J., where product improvement is a continuous research project.

MINERAL RESOURCES, OPERATING FACILITIES,
QUALITY PRODUCTS AND SERVICE
CREATE SATISFIED CUSTOMERS

G. S. ZIEGLER & COMPANY
GREAT NECK, N. Y.
Agents in Principal Cities Throughout the United States and Canada.
MINES: "CASTLE PEAK," "LITTLE BONANZA," "LITTLE EMMA."

Z CO

See us at the show—BOOTH 931

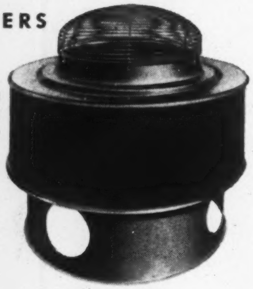
Here are DOERR motors at work!

AIR-COOLED CONDENSERS

(Left) **KRAMER TRENTON CO.** Unicon, designed for large capacity installations.

• • • •

(Right) Type AC5A unit offered by the **TRANE CO.** For use with packaged air conditioners.



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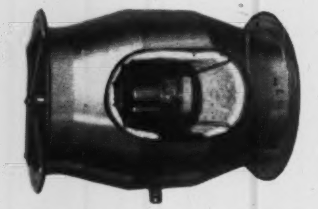
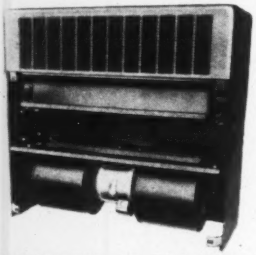


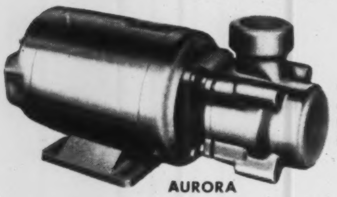
Induced draft bifurcator made by **DE BOTHEZAT FANS** Division of American Machine and Metals, Inc. Motor is special variable-speed type with Class B insulation for high temperature operation.



YOUNG RADIATOR CO. cabinet-type heater with cover removed to show double-shaft blower motor.

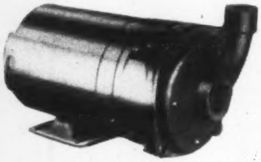
• •

AIR CONDITIONING PUMPS



AURORA

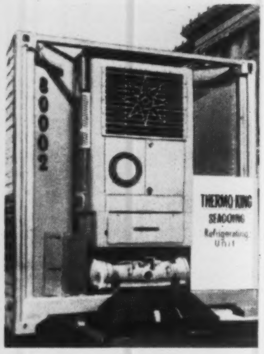
Circulating pumps designed for cooling tower service in sizes from ¼ to 7½ hp.



INGERSOLL-RAND

• •

Large trailer truck refrigeration unit by **THERMO KING CORP.** for inter-coastal shipping. Stand-by power furnished by 7½ hp. DOERR motor with protective features for use in salt water atmosphere.



THESE leading manufacturers and many others are getting *more* by using Doerr motors.

Our fifth consecutive appearance in the Heating and Air Conditioning Exposition indicates our interest in this important field.

The variety of designs required by the applications shown is proof of our willingness and ability to meet special design problems.

Contact DOERR on your next motorization problem.

DOERR now offers:

★ **Standard and special A-C motors from 1/30 to 15 hp.**

★ **Right-angle gearmotors to 3 hp.**

Write, wire or phone for complete data.

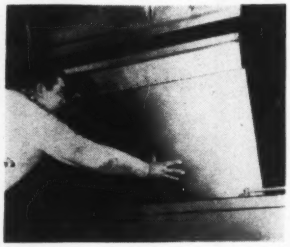
YOU GET *MORE* WITH DOERR !

DOERR
Electric Corporation
300 North Fourth Avenue
CEDARBURG, WISCONSIN

EQUIPMENT DEVELOPMENTS *Continued*

Systems, Inc., Dept. HPAC, 73 Southfield Ave., Stamford, Conn.

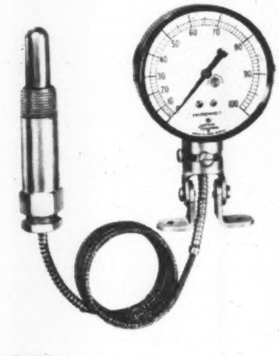
Hammer actuated "DX-100" tool drives variety of pins, threaded studs into steel, cement, concrete, masonry, bricks, composition blocks. Conical fasteners are rustproof, available in lengths to 4 in.



Duct Insulation . . .

. . . formulated to provide vapor barrier meeting "fireproof" building requirements—*Industrial Insulation Div., Baldwin-Hill Co., Dept. HPAC, 500 Breunig Ave., Trenton 2, N. J.*

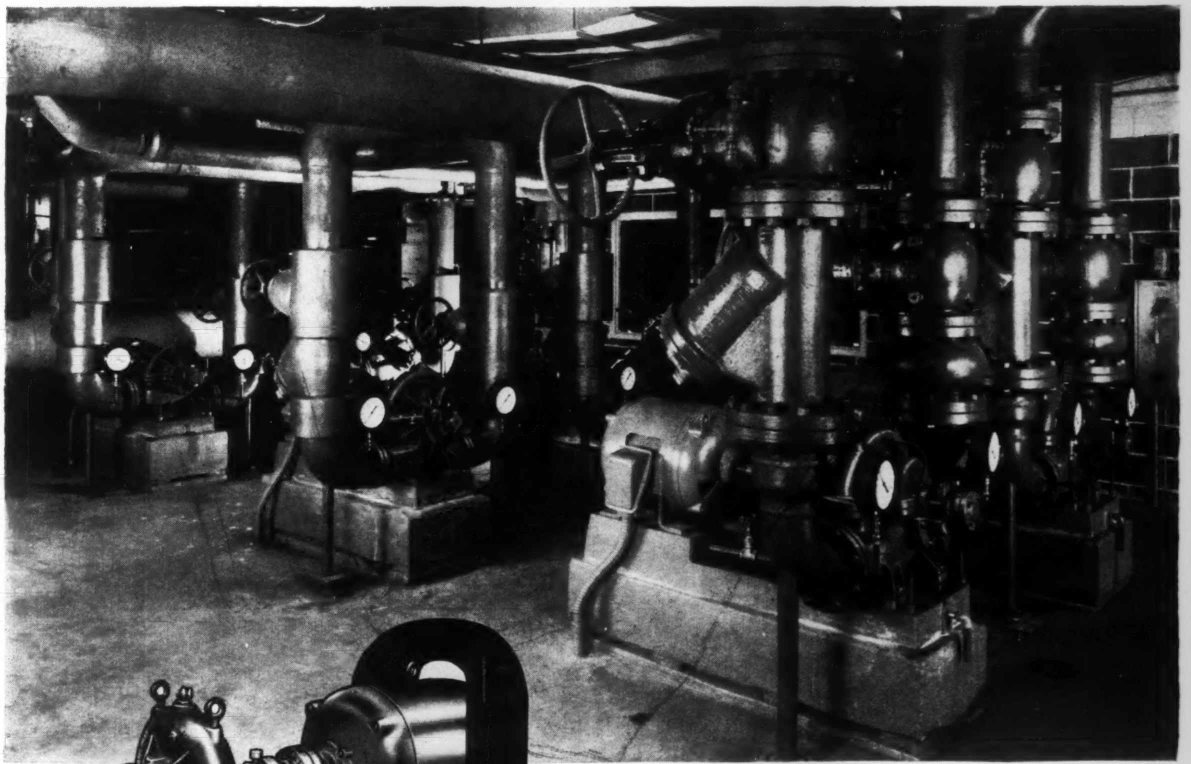
Duct insulation composed of foil-faced spun mineral wool faced on one side with embossed aluminum foil 0.0025 in. thick. Available in 24 × 48 in. sheets, 1, 1½, 2 in. thick. Material has density of 7 lb per cu ft; thermal conductivity of 0.24 Btu per hr at mean temp of 75 F; will withstand temperatures to 250 F.



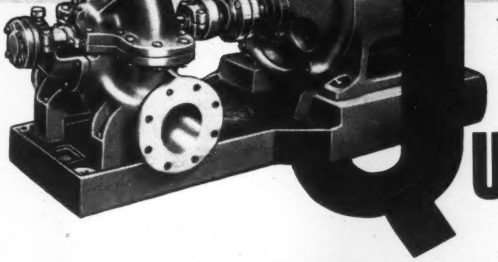
Dial Thermometers . . .

. . . especially designed for piping systems—*Marsh Heating Equipment Co., Dept. HPAC, 3500 Howard St., Skokie, Ill.*

Dial thermometer has universal joint which permits dial to be tilted.



"Buffalo" Double Suction Single Stage Pumps Used for Condenser Water and General Service.



QUALITY SYSTEMS

NEED QUALITY PUMPS "BUFFALO" WILL BACK UP YOUR SELECTION

In clear water installations where a long life of maintenance-free dependability is desirable, you can rely on "Buffalo" Double Suction Centrifugal Pumps. "Buffalo" gives you quality design and construction. The "Buffalo" features listed at right speak for themselves. "Buffalo" Pumps combine the finest hydraulic design and workmanship with the best materials obtainable.

EXTRA Savings with Low Parts Inventory:

Because of maximum parts interchangeability, users of "Buffalo" Pumps enjoy lower parts inventories. The result is savings in money and space. Another advantage is greatly simplified inventory control.

Whatever your needs in clear water service, investigate the advantages of "Buffalo" Double Suction Pumps. Capacities from 10 to 14,000 gpm. For complete facts, write for Bulletin 955-S. Or better yet, contact your nearby "Buffalo" engineering representative.

Long Life, Reliable Operation Features of "Buffalo" Pumps Include:

- **Casings** — Precision-machined with ample water passages. Horizontally-split for quick inspection.
- **Impellers** — Designed for highest efficiencies, consistent hydraulic balance.
- **Ball Bearings** — Heavy-duty type, supporting each end of sturdy, oversize shaft.
- **Bronze Wearing Rings** — Are easily renewable. Thus rings only and not casing need be replaced.

"Buffalo" Pumps bring you the "Q" Factor — the built-in QUALITY which provides trouble-free satisfaction and long life.

BUFFALO PUMPS
Division of Buffalo Forge Co.
171 MORTIMER ST. • BUFFALO, N. Y.

"Buffalo" PUMPS

Canada Pumps, Ltd., Kitchener, Ont. • Sales Representatives in all Principal Cities

A BETTER CENTRIFUGAL PUMP FOR EVERY LIQUID

FOR A NEW PERSPECTIVE
ON HEATING, COOLING and
AIR CONDITIONING EQUIPMENT
see the new YOUNG lines

Young SPECIALISTS IN HEATING, COOLING and AIR CONDITIONING

SEE WHAT THE YOUNG APPROACH TO ECONOMY THROUGH QUALITY CAN DO FOR YOU!

Young Design and Engineering deliver outstanding value and performance in each of their lines of heating, cooling and air conditioning products. Longevity and satisfaction through quality is the Young approach to economy. *Note* the products listed here. *See* them at our booth at the Exposition at Philadelphia January 26-30. *Get a preview* by sending for the product catalogs which interest you. *Compare* performance ratings and features with competitive products. You will find that Young Specialists offer a sound solution to practically every type of heating, cooling and air conditioning problem. See what Young Heat Transfer Specialists can do for you.

See You at the 14th International Heating and Air Conditioning Exposition.
JANUARY 26-30 • BOOTH 848

YOUNG RADIATOR COMPANY
Racine, Wisconsin — Dept. 519-A

New **Central Station Air Conditioning Units**
Catalog No. 7558

New **Remote Roomaire® Conditioning Units**
Catalog No. 7758

New **Vertiflow® Unit Heater**
Catalog No. 2658

New **Heating Coils**
Catalog No. 4558

New **Cooling Coils**
Catalog No. 5559

Other Lines

Cabinet Unit Heaters
Catalog No. 6556-A

Gas Fired Unit Heaters
Catalog 2758

Horizontal Unit Heaters
Catalog 2557

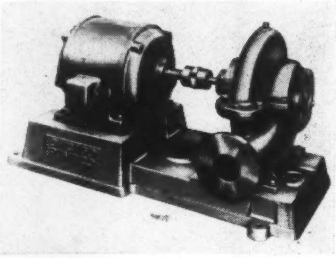
Convector Radiators
Catalog Nos. 4049-A & 4150

Perimaheat® Baseboard Convectors
Catalog No. 4354-A

EQUIPMENT DEVELOPMENTS

Continued

swivelled for easy reading. Two types available: rigid stem for location at point of measurement; and distant reading, with capillary tubing for installation some distance from point of measurement. Thermometers are of vapor tension type with range of zero to 100 F (for chilled water); 20 to 120 F (for condenser water); 40 to 240 F (for hot water space heating and small commercial hot water). Dial sizes are 3½ and 4½ in.



Pumps . . .
. . . designed for clean hot or cold water handling applications in industrial installations—*Chicago Pump Co., Dept. HPAC, 622 Diversey Pkwy., Chicago* 14.

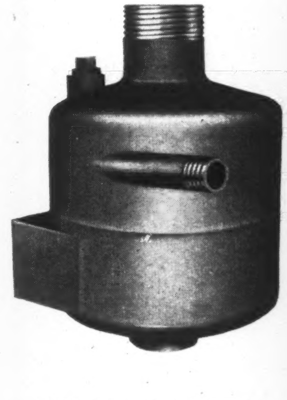
"Type S" pumps equipped with ceramic mechanical seals intended to eliminate stuffing box drip and piping to drain. Seals also said to permit short span between bearings, eliminating shaft deflection. Seals suitable for maximum temperature of 212 F. Available in 2, 3, 5, 7½, 10, 15 and 1750 hp sizes with 2½ in. suction and 2 in. discharge or 3 in. suction and 2½ in. discharge.

Arc Welder . . .
. . . in three overlapping main step settings—*Hobart Bros. Co., Dept. HPAC, Hobart Sq., Troy, Ohio.*

Welding range of 100 to 625 amp possible through settings of 100 to 300 amp, 195 to 475 amp and 375 to 625 amp. Rheostat provided for fine adjustment. Transformer type welder rated at 500 amp at 40 volts on 60 percent duty cycle. Welder is 48 × 21¼ × 21¼ in. in size weighs 524 lb.

2 SURE WAYS TO BEAT HIGH MAINTENANCE COSTS!

1



ASK FOR BULLETIN

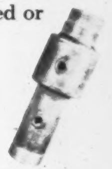
WILSON CENTRIFUGAL BLOWDOWN SEPARATOR

SOLVES BOILER BLOWDOWN DISPOSAL PROBLEMS

Here is a safe, economical way to handle boiler blowdown . . . at atmospheric pressure. Steam flash is instantaneously cleared through the large top vent pipe. Water and sludge fall by gravity through bottom drain. No objectionable noise. Install where convenient, inside or out—even on boiler room roof. One Wilson Separator can handle two or more boilers in battery, if desired. Models with threaded, flanged or butt welding connections available.

NEW! WILSON AFTERCOOLER

Effectively reduces temperature of blowdown before entering sewer. Easy to install—requires no maintenance. ▶



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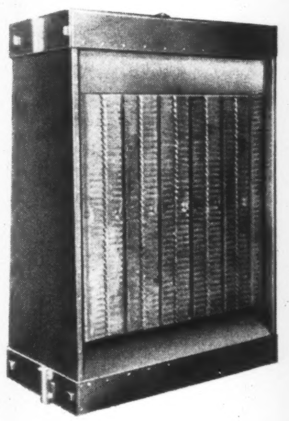


ASK FOR BULLETIN

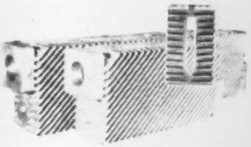
WILSON UNIT HEATERS

with "LIFETIME" ALL-CAST ALUMINUM ELEMENT

Provides large volume of air over wide floor area, continuously, economically. Sturdy enclosure houses the patented Wilson all-cast aluminum radiation element with integrally cast directional fins. Completely eliminates the need for costly, troublesome louvers. Recognized as a unit heater that is completely dependable in service where corrosive atmospheres are encountered. *Capacities 64,000 to 430,000 BTU.*

WILSON ALL-CAST ALUMINUM RADIATION ELEMENT

This is the same proved radiation element used so successfully in severe diesel locomotive service. Chamber shape plus the patented 45° direction fin feature provides high thermal efficiency, in a compact design. Extremely rugged in construction. High pressure hydrostatic tested.



WILSON ENGINEERING CORPORATION

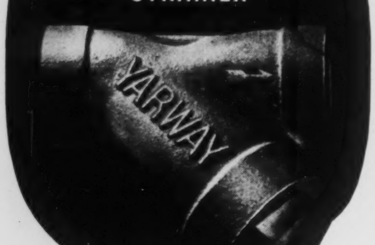
6 NORTH MICHIGAN AVENUE CHICAGO 2, ILLINOIS

DEPT. J-1

YARWAY
IMPULSE STEAM TRAP

a good team
for steam

YARWAY
FINE SCREEN
STRAINER

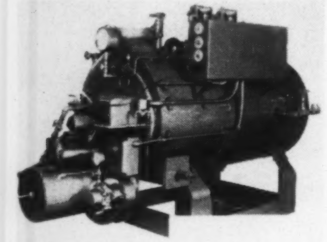


This Yarway team has scored high—over a million installed on all types of steam equipment. Stocked and sold by 270 Industrial Distributors. For free Steam Trap Book, write YARNALL-WARING CO., 107 Mermaid Ave., Philadelphia 18, Pa.

go YARWAY
with confidence

EQUIPMENT DEVELOPMENTS

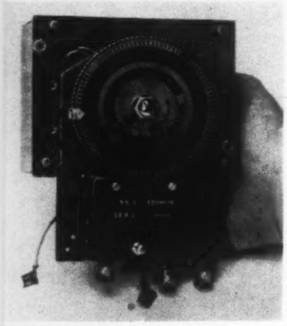
Continued



Steam Generator . . .

. . .with patented combustion feature *—Cyclotherm Div., National-U. S. Radiator Corp., Dept. HPAC, 157 E. First St., Oswego, N. Y.*

High pressure 15 hp steam generator has same straight gas fired principle as company's other steam generators, said to have 80 percent efficiency in two passes. Two combination burners offered: light oil and gas burner; heavy oil and gas burner. From cold start to full power takes 15 to 20 min, says manufacturer. Firing rates for model: 1160 cu ft for manufactured gas; 630 cu ft for natural gas; 720 cu ft for mixed gas. Overall size of boiler is 3 ft 5¼ in. × 3 ft 2-1/3 in. × 6 ft. Illustrated specification data sheet available from company presents new unit.



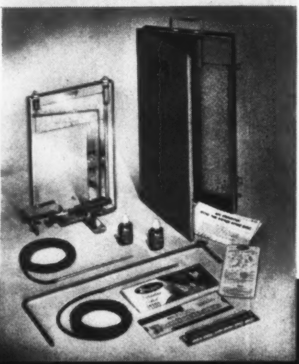
Time Switches . . .

. . .designed to continue operation in event of power failure*—Heating Controls Div., Tork Time Controls, Inc., Dept. HPAC, 33 Grove St., Mount Vernon, N. Y.*

Time switch can be operated on 7 day and "Skip-A-Day" scheduled. Maintains "on time" operation up to 17 hr after power failure through reserve action of electrically wound spring.

Dwyer
CONTROLS GAGES

AIR VELOCITY
METER
No. 400



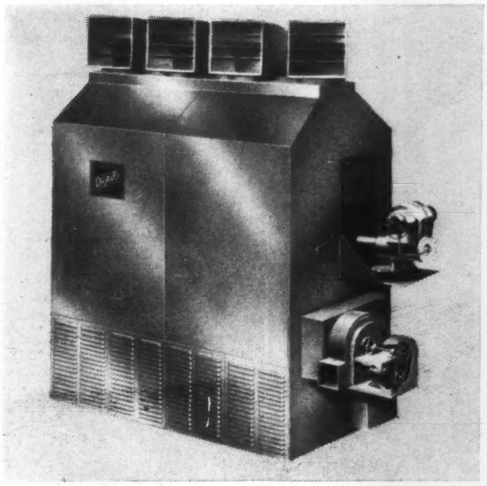
One Instrument
Tells Both
Air Velocity and
Static Pressure!

- **Reads directly in feet per minute and inches of water.**
- **Check *all* velocities from 400 to 10,000 F.P.M.**
- **All static pressures from 0 to 10" of water.**

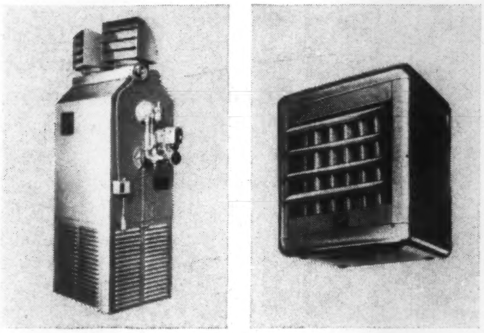
Tests fan and blower discharge and inlet pressures, pressure drop across filters, balances air conditioning systems, etc. Complete kit includes dual purpose manometer, 18" stainless steel pitot tube, Magne-clip mounting panel and all necessary fittings, tubings, instructions and accessories.

Write today for literature and prices.

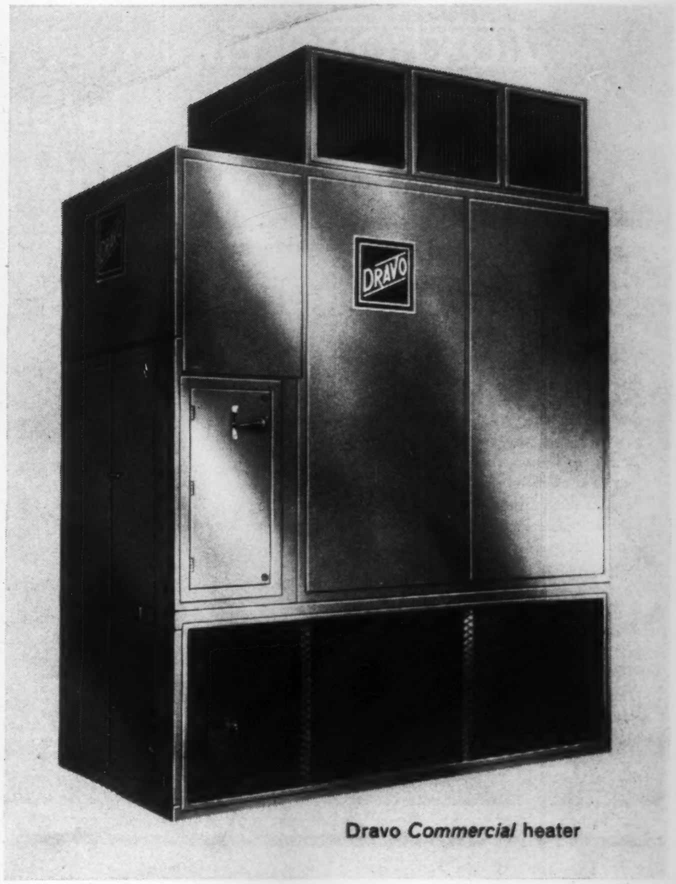
F. W. DWYER MFG. CO.
P.O. Box 373-H Michigan City, Ind.



Dravo *Industrial* heater



Dravo *Paraflo* heater and *Suspended Unit* heater



Dravo *Commercial* heater

ONLY DRAVO HAS ALL 4

1. **FULL LINE**—A size and type for every heating need
2. **DESIGN AND APPLICATION KNOW-HOW**
3. **NATION-WIDE SERVICE**
4. **RESEARCH**

Dravo's full line of heaters is backed by a highly trained and extensive service organization, with a reputation for dependability and thoroughness.

This is only one of the "extras" that benefit Dravo customers. The performance built into every Dravo heater is applied so that each installation functions with maximum efficiency. This is only possible because *every* Dravo technical representative *is a qualified heating engineer.*

Complete research and laboratory facilities conduct continuous studies of heater design problems. With the experience gained from over 10,000 installations, these studies result in basic improvements in all phases of both heater engineering and its application to unusual heating problems.

Make sure you get "ALL 4" when you are buying space heating. Only Dravo has the manpower, the technical background, and the facilities to assure your getting the most for your money. Write Dravo Corporation, Pittsburgh 22, Pennsylvania.

DRAVO
CORPORATION

DON'T MISS THE DRAVO EXHIBIT—BOOTH 121

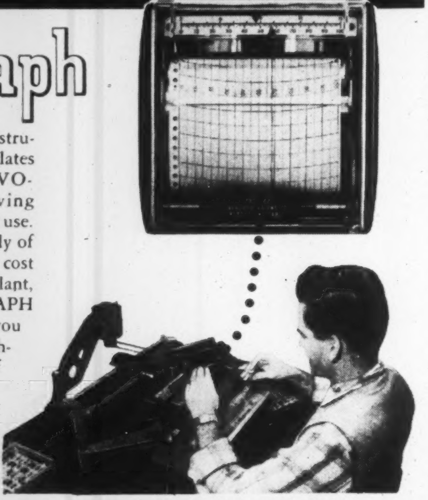
FOXBORO Engraves Instrument Nameplates right in its own plant

with Engravograph

The Foxboro Company, pioneers in instrumentation progress, engraves nameplates for its instruments with ENGRAVOGRAPH, the tracer-guided engraving machine that anyone in your plant can use. Foxboro is always sure of a ready supply of nameplates with this time-saving, low cost way to make them, right in its own plant, when needed. Portable ENGRAVOGRAPH—no larger than a typewriter—lets you prepare nameplates, without using highly skilled engravers, at a fraction of sub-contracting costs, for heating, air conditioning or piping systems with a variety of instruments and controls.

Over 23,000 Engravographs in use.

Write for booklet HE-1



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new hermes ENGRAVING MACHINE CORP.
13-19 UNIVERSITY PLACE, NEW YORK 3, N. Y.

NEW Metal Blade Aeromaster* Fan

AEROMASTER fans 54″ to 22′ for cooling towers and radiator-type coolers.

Lasts Longer • Costs Less

Efficiency . . . economy . . . durability—three important standards—are yours in the AEROMASTER fan.

AEROMASTER fans are efficient because they embody advanced aerodynamic principles. True airfoil blade sections give maximum air delivery.

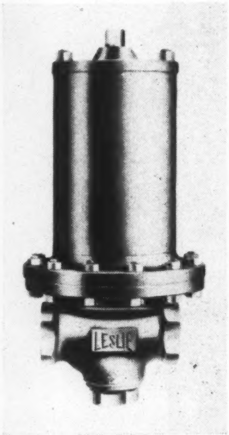
AEROMASTER fans are economical because adjustable pitch angle of the blade permits a flexibility of setting which enables you to decrease fan load to an accurate minimum horse-power requirement. Design features reduce labor and installation costs.

AEROMASTER fans are durable because they are made from corrosion resisting, silicon-magnesium, aluminum alloys with high tensile strength, fine grain structure and increased endurance limit.

For more details write to KOPPERS COMPANY, INC., Aeromaster Fan Dept., 6801 Scott Street, Baltimore 3, Md.

*Koppers Trademark

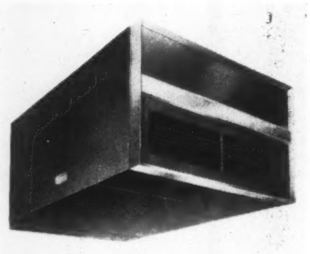
KOPPERS Aeromaster Fans
Engineered Products Sold with Service



Pressure Reducing Valve

. . . with mechanical pilot operation—*Leslie Co., Dept. HPAC, 248 Delafield Ave., Lyndhurst, N. J.*

Valve design employs mechanical pilot device out of the path of steam intended to eliminate dirt catching and close fitting parts. Tested for continuous, intermittent and standby services.



Air Conditioning Units . . .

. . . in 3, 5, 8, 10 and 15 ton capacities with improved plenum chamber—*Typhoon Air Conditioning Co., Div. of Hupp Corp., Dept. HPAC, 505 Carroll St., Brooklyn 15, N. Y.*

Smaller units of manufacturer's "Golden Anniversary Line" may be suspended from ceiling or recessed into wall. Large capacity fans said to overcome air resistance in ductwork installations to provide full rated cooling. Coils constructed from seamless copper tubes with bonded helical fins to provide maximum heat transfer. May be used with water cooled or waterless air conditioning. Btu per hr cooling capacity is 37,-000 for 3 ton model; 60,600 for 5

FICTION and FACT

FICTION:

Heavy weight is a requirement for heavy duty panel type air filters.

FACT:

R P Aluminum Industrial Air Filters weigh only 4 pounds (20" x 20" x 2") compared to 12 pounds for a steel filter of equivalent size.

RP®

Multi-Velocity Industrial
AIR FILTERS

Strength and ruggedness, with light weight, is an important advantage of R P Multi-Velocity Industrial Air Filters. Constructed of aluminum, these permanent-type washable filters are safe and easy to handle, during installation . . . during cleaning; eliminate the necessity for expensive, heavy structural design in filter bank construction; reduce operating costs through longer service life and faster, easier handling; are nonrusting, corrosion-resistant.

Plus—ODOR REMOVAL—automatic, efficient absorption of odors through the use of R P Super Filter-Coat, the odor and dirt removing adhesive. *Write for complete information.*

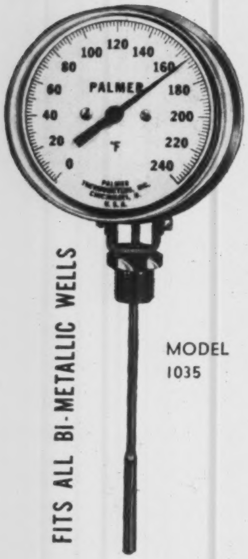
RP *Products of Research*

RESEARCH PRODUCTS *Corporation*
Dept. 46, Madison 10, Wisconsin

Outstanding Accuracy

PALMER

Dial Thermometer



FITS ALL BI-METALLIC WELLS

MODEL 1035

Check these functional features

- Direct-drive Bourdon Coil with a filled system for longer lasting accuracy.
- Stem can be placed at any desired angle and case can be rotated to most readable position.
- External calibration for zero setting.
- Unaffected by stem alignment.
- Accurate to one scale division.
- No sticking at any temperature.
- Non-corrosive case.

PALMER

THERMOMETERS, INC.

Mfrs. of Industrial Laboratory, Recording and Dial Thermometers

2515 Norwood Ave., Cincinnati 12, O.

EQUIPMENT DEVELOPMENTS

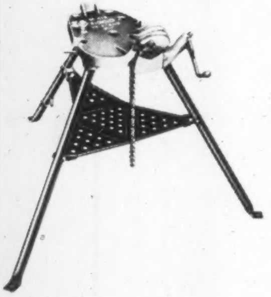
Continued

ton model; 97,500 for 8 ton model; 125,000 for 10 ton model; 191,000 for 15 ton model. Available with hot water or steam coils for heating applications.

Outdoor Air Intake . . .

. . .in reinforced glass fiber—*Gallaher Co., Dept. HPAC, 4108 Dodge St., Omaha, Neb.*

Air intakes lightweight, do not require maintenance or painting, says manufacturer. Available in variety of colors. Unit shown measures 24 in. at base and 25 in. high; weighs 30 lb.



Chain Vise . . .

. . .designed to speed all pipe work —*Ridge Tool Co., Dept. HPAC, Elyria, Ohio.*

"Ridgid No. 450 Tristand Chain Vise" is portable workbench with no loose parts, says manufacturer. Folding legs with built-in tray lock in position for rigid work support. Vise base overhangs legs for clear tool swing, has tool hanger slots, rear pipe rest, 3-size pipe bender, adjustable ceiling brace screw. Unit weighs 12½ lb. Handles pipe $\frac{1}{8}$ to 5 in.

Products that Call for

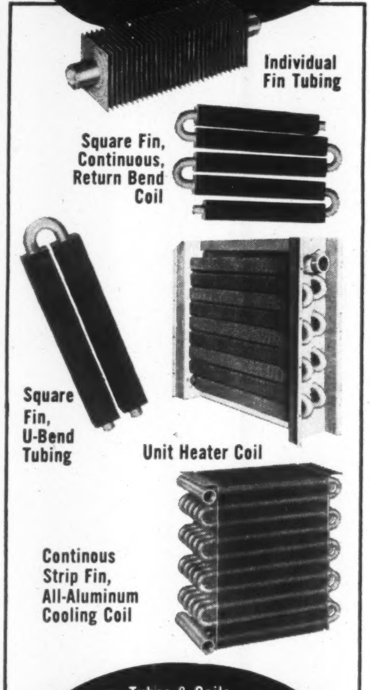
HEATING or COOLING

Call for

G&O

...THE GREATER-HEAT-TRANSFER, EXTENDED-SURFACE TUBING

★ known for reliability since 1915 ★


Individual Fin Tubing
Square Fin, Continuous, Return Bend Coil
Square Fin, U-Bend Tubing
Unit Heater Coil
Continous Strip Fin, All-Aluminum Cooling Coil

- Tubes & Coils
- Individual finned tubing in standard sizes, square or round fins of any height or spacing
- Straight lengths, U-bends, continuous return-bend; special shapes
- Single pass, header-to-header
- Simple to install
- Free design assistance
- Write for catalog

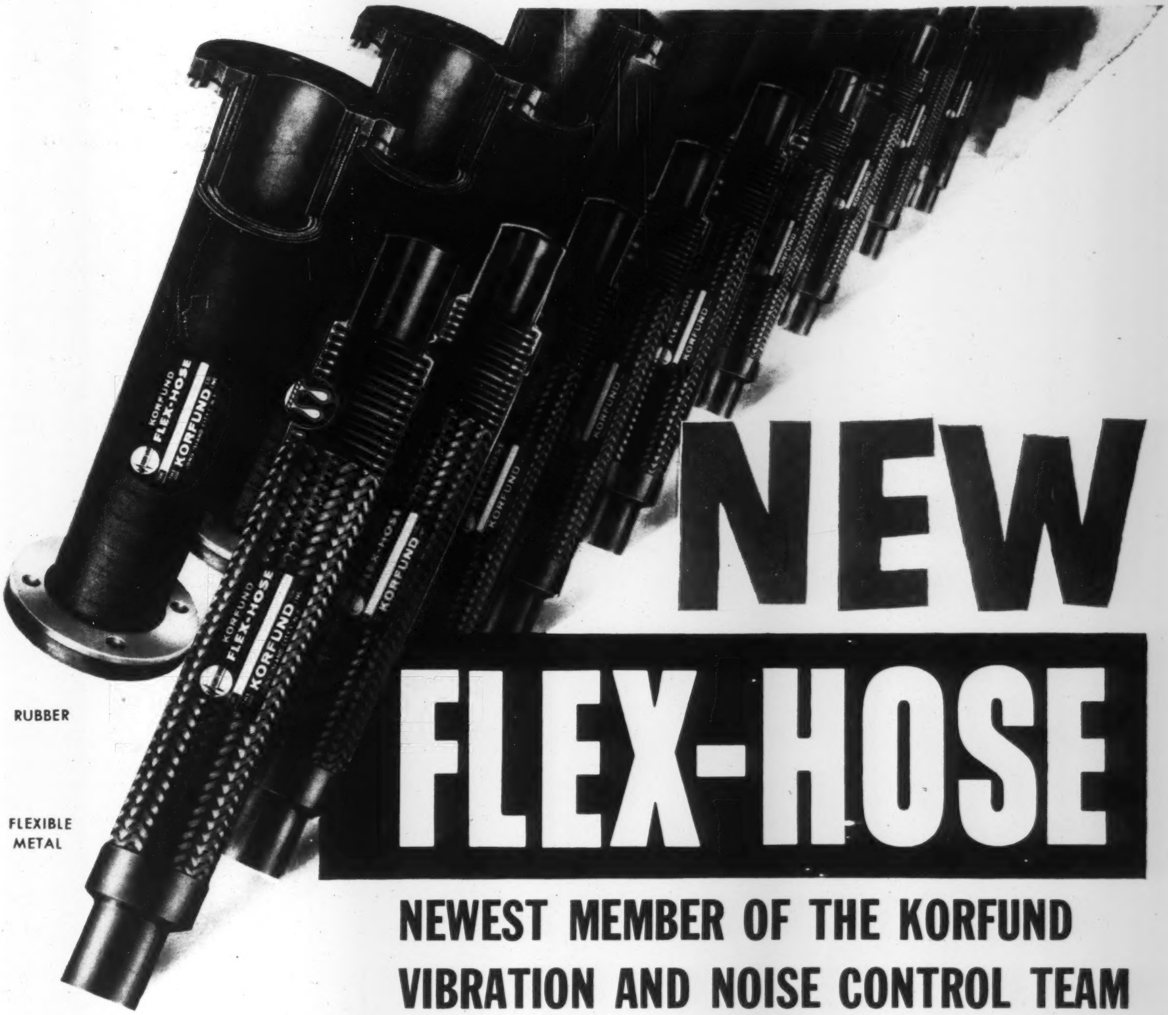
"If it's to transfer heat, G & O can't be beat"

THE G&O Mfg. Co.

G&O RADIATION

139 Winchester Ave.
New Haven, Conn.

1420 Ridgeway St.
Jackson, Miss.



NEW FLEX-HOSE

NEWEST MEMBER OF THE KORFUND VIBRATION AND NOISE CONTROL TEAM

Now you can get complete top-to-bottom vibration and noise control from Korfund. With the addition of Korfund Flex-Hose (available in both flexible metal or rubber), our line is complete. Now you can get really smooth operation from pumps, compressors and refrigeration machines by connecting both suction and discharge lines to new Flex-Hose in order to stop transmission of vibration and noise through the rigid piping; and, by mounting the equipment on Korfund Vibro-Isolators to stop transmission through the floors and structure.

We've always recommended using flexible connectors in conjunction with our isolation mounts for efficient operation. Now we can offer you what we consider to be the best available — Flex-Hose. These quality products were designed and approved by Korfund engineers—specialists in vibration and noise control for more than a half-century.

Korfund Metal Flex-Hose is available in corrugated, seamless bronze, carbon steel, stainless steel, or monel tubing in fourteen pipe sizes from ¼" I.D. to 16" I.D. The tubing is protected and reinforced by a new unique braid providing especially high burst strengths. Maximum steady working pressures vary with size up to 1700 psi, and may be increased by as much as 75% by added braiding. Flex-Hose comes in your choice of five standard end fittings.

Korfund Rubber Flex-Hose consists of an inner rubber tube protected by a wire reinforced carcass and outer wrap. It is available in fifteen pipe sizes from ½" I.D. to 12" I.D. Fittings are either male threaded hex ends, or full faced integral built-in rubber flanges. Rated working pressures are 150 psi and 250 psi depending on job requirements.

Korfund Flex-Hose is shipped with a written one-year warranty and instructions. Find out more about it. Write for Bulletin 61.

Drop in **to see the new Flex-Hose and the other quality products in the Korfund line at booth 1022 at the Air Conditioning Show.**

KORFUND

THE KORFUND COMPANY, INC.
VIBRATION • SHOCK • NOISE: CONTROL & MEASUREMENT
48-01F THIRTY-SECOND PLACE • LONG ISLAND CITY 1, NEW YORK

SOPLASCO

MOISTURE ELIMINATOR BLADES

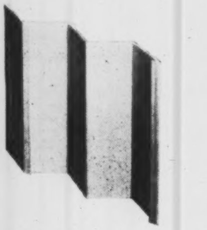
for

Industrial Air-Conditioning

are

MORE EFFICIENT!

SOPLASCO Moisture Eliminator Blades allow less carry-over at normal velocities — lower power requirements due to turbulence control — greater efficiency because of less down-time for cleaning and maintenance!



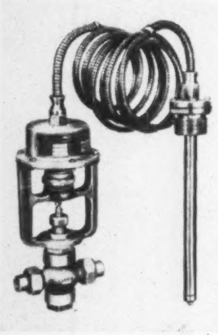
For further information write, wire, or phone SOPLASCO AIR PRODUCTS DEPT.

Southern Plastics Co.

408 Pendleton St.
Columbia, S. C.

EQUIPMENT DEVELOPMENTS

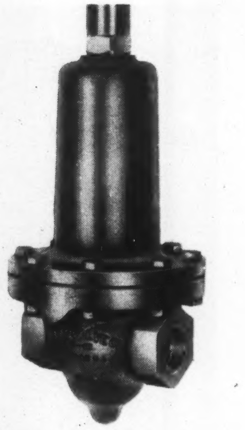
Continued



Temperature Regulator . .

. . .available in sizes ½ through 2 in. IPS—*Lawler Automatic Controls, Dept. HPAC,* 453 *N. MacQuesten Pkwy., Mount Vernon, N. Y.*.

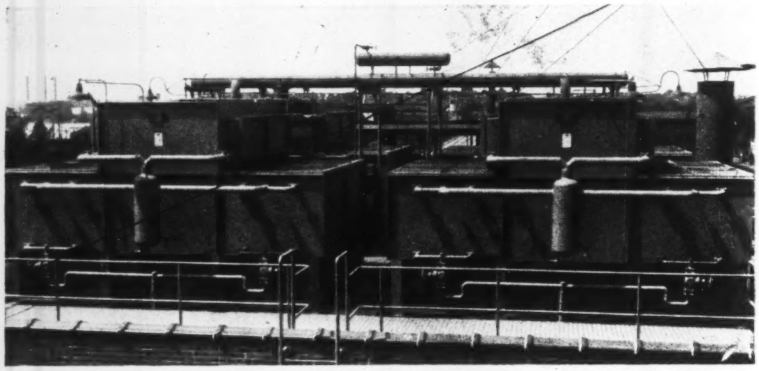
Balanced single seat temperature regulator is tight closing valve designed for steam pressures to 150 psig. Available in bronze body with union ends. Self contained unit with thermal actuator. Valves supplied to control at temperatures from 40 to 385 F (increments of 40 or 70 F).



Reducing Valves . . .

. . .formulated to handle initial pressures up to 300 psi with gas, oil, water—*Atlas Valve Co., Dept. HPAC,* 280 *South St., Newark* 5, *N. J.*

Valve, designated "Fig. 1910, Type E," made of cast iron with bronze and steel trim. Has single diaphragm, single composition seat construction. Available in six sizes ½ to 2 in. Outlet or regulated pressure spring

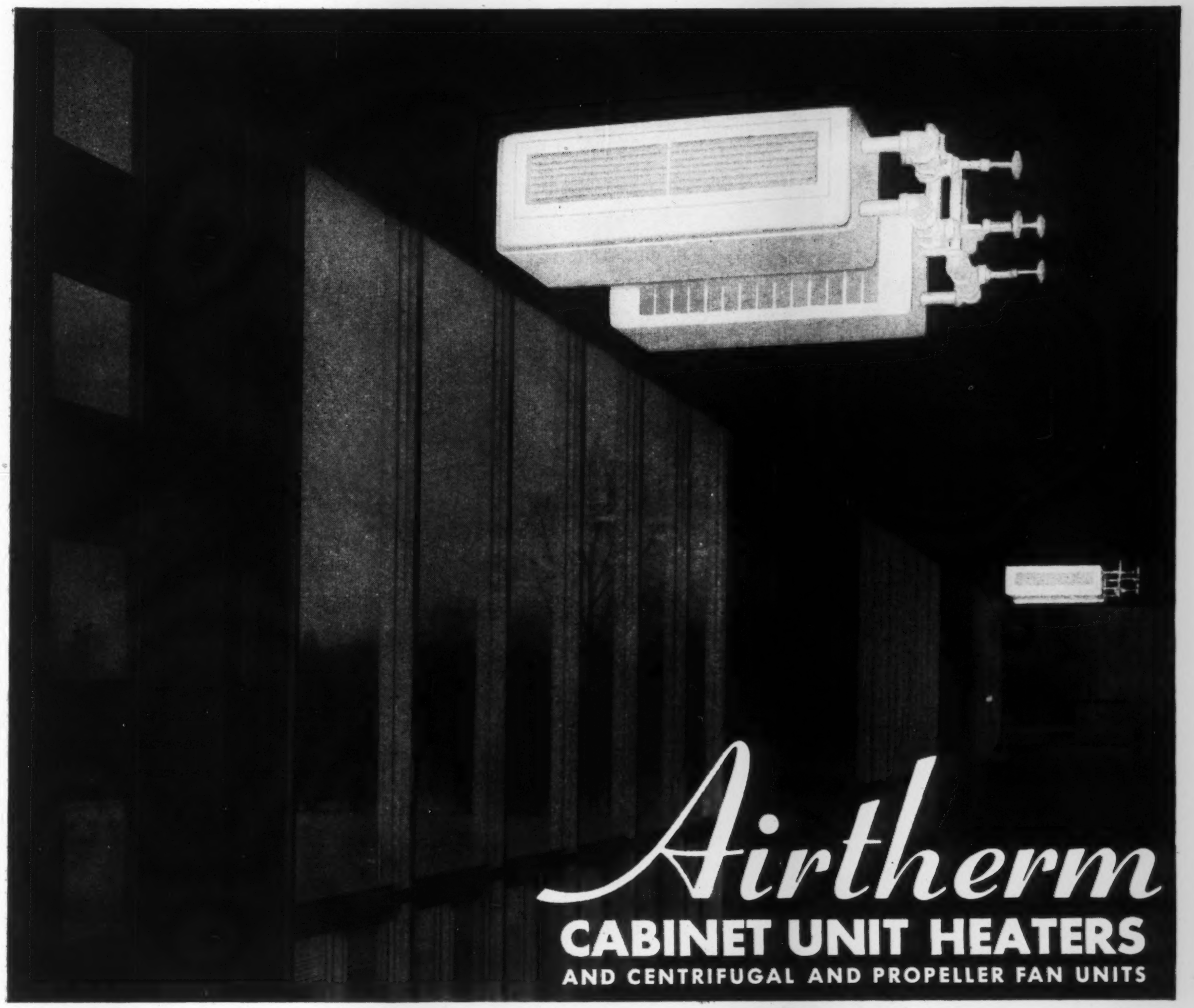


GET TROUBLE-FREE CONDENSING AND GREAT POWER AND LABOR SAVINGS

NIAGARA AEROPASS CONDENSERS give you trouble-free, automatic refrigeration at the least spread between head-pressure and suction pressure. You gain a great power saving. You also get removal of superheat before condensing, condensing at subcooled temperature and a refrigerant fully purged of oil. Out-door air takes up heat of condensation through evaporation of the least amount of water; low temperature condensing means freedom from scaling and loss of capacity. Niagara sectional design offers you lower costs for more compact equipment, easier to keep up. You get always full capacity, "new plant" efficiency and continuous savings such as 95% of condensing water cost that add to your profit. Managers who know their costs buy Niagara Aeropass Condensers.

Write for Bulletin 131

NIAGARA BLOWER COMPANY
Dept. HP-1, 405 Lexington Ave., New York 17, N. Y.
Niagara District Engineers in Principal Cities of U. S. and Canada


Airtherm
CABINET UNIT HEATERS
AND CENTRIFUGAL AND PROPELLER FAN UNITS

chosen to heat the building and entrances of the

WORLD'S LARGEST OUTDOOR SKATING RINK

The twenty-two industry-approved, performance-proved features of Airtherm Cabinet Unit Heaters made them first choice for this world famous project. These, combined with an Airtherm Centrifugal Fan Heating and Ventilating Unit and Propeller Fan Unit Heaters, will guarantee efficient, trouble-free heating performance through the years.

Note: The Centrifugal Unit heats the major portion of the building through perforations in the acoustical aluminum ceiling, automatically providing 100% outside air during the day and re-circulated air at night.

SEND FOR CABINET UNIT HEATER CATALOGUE #1402

Contains specifications on 8 models from 304 CFM to 1600 CFM, and 22,200 BTU to 124,800 BTU.

The Mark Steinberg Memorial Skating Rink Operated by the City of St. Louis provides 230′ x 120′ of ice—the largest artificial outdoor ice skating rink in the world. Adjoining building houses a kitchen, snack-bar, skate rental and change area, pro shop, storage, first-aid and office.

Architect: Frederick Dunn & Associated Architects
General Contractor: Robert Paulus Construction Co.
Consulting Engineers: Ferris & Hamig
Mechanical Contractor: Shure-Richardson, Inc.

Convectors • Propeller Fan Unit Heaters • Direct Fired Space Heaters • Gas Fired Unit Heaters • Centrifugal Fan Unit Heaters
Cabinet Unit Heaters • Air Conditioning Units

AIRTHERM MANUFACTURING COMPANY, 702 S. SPRING, ST. LOUIS 10, MO.

NEW **Allflex**

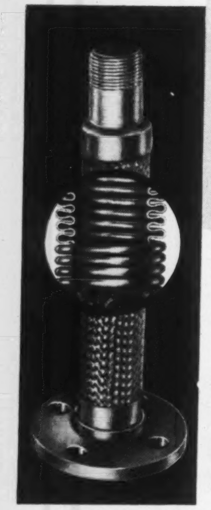
VIBRATION TAMERS

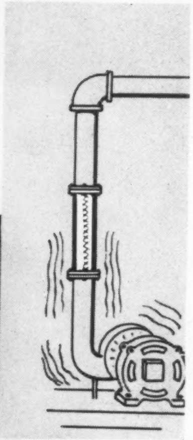
FOR EFFECTIVE PIPELINE VIBRATION CONTROL

- **Remove "shakes"** • **Dampen noise**
- **End stressed fitting failures**
- **Prevent cracked walls** • **Compensate for expansion** • **Stop costly repair "downtime"**
- **"Smooth out" pump system pulsations, etc. . . .**

ALLFLEX "VIBRATION TAMERS" are sold through leading Industrial Distributors. If not available locally, IMMEDIATE FACTORY SHIPMENT . . . IS ASSURED!

Write, wire, or phone TODAY for helpful, fact-filled ALLFLEX ENGINEERING DATA SHEET.





Standard ALLFLEX "VIBRATION TAMERS" have Flanged or Threaded End Connections (either or both available) In

STAINLESS STEEL
BRONZE
MONEL

ALLIED METAL HOSE COMPANY
3745 Ninth St. • **Long Island City 1, N.Y.** • **STilwell 4-5173**

Now in 5 Wall Thicknesses

3/16'', 1/4'', 3/8'', 1/2'' & 3/4''

RUBATEX CLOSED CELLULAR TUBING INSULATION

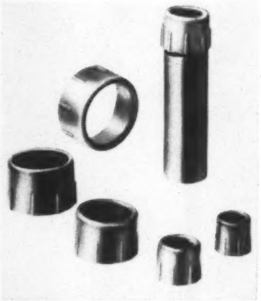
Rubatex tubing easily installed on any fluid lines requiring temperature consistency and/or condensation resistance where service conditions are moderate.

Closed cellular structure will not absorb moisture—keeps pipes dry — eliminates any need for additional vapor barrier — has excellent weather-aging characteristics plus unusually good thermal insulation properties.

For details and samples — WRITE:

RUBATEX DIVISION, Dept. HP
Great American Industries, Inc.
Bedford, Virginia

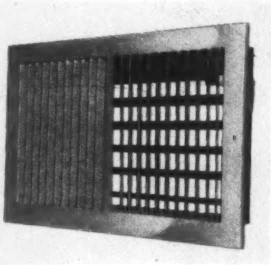
ranges: 5 to 35 psi; 20 to 60 psi; 40 to 90 psi. Valve also made with reverse seating arrangement to operate as relief valve.



Thread Protectors . . .

. . . designed to eliminate hazards of handling, shipping threaded pipe—*Plastiline Inc., Dept. HPAC*, 2 *Intervale St., White Plains, N. Y.*

Plastic thread protectors produced in NEMA color codes: blue for even sizes; red for quarter sizes; black for half sizes. Protectors are precision molded for production line snap-on attachment and removal, according to manufacturer.



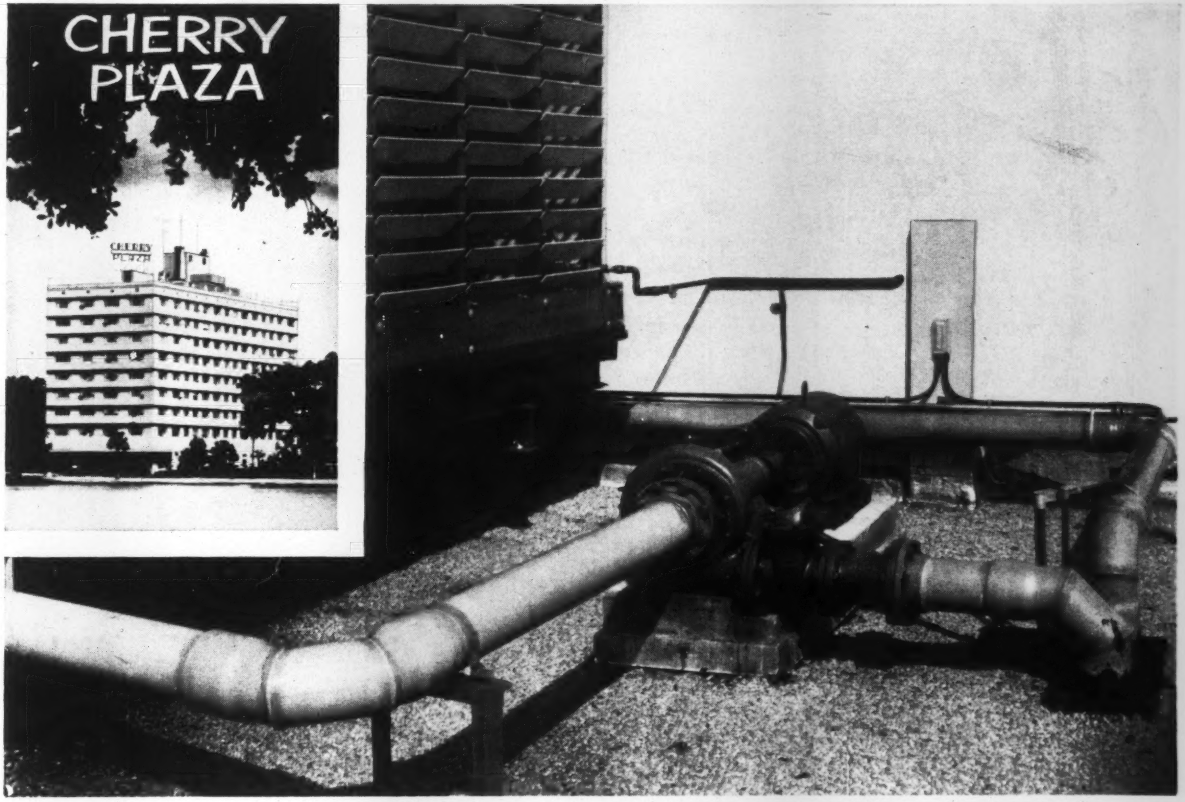
Registers . . .

. . . with multi-louver valve and one-piece face construction—*Air Control Products, Inc., Dept, HPAC, Coopersville, Mich.*

"No. 120" series said to be suitable for year 'round air conditioning systems. One-piece face construction with $\frac{1}{2}$ in. wide stamped fins provides strength, large free area, according to manufacturer. Fins preset 30 deg out from center of face, can be adjusted to provide horizontal air pattern required by installation. Offered in range of sizes. Catalog "59 C. R." describes product.

News about

B.F.Goodrich Chemical *raw materials*



6" pipe made from Geon *is used to deliver water from cooling tower on ninth floor of the Cherry Plaza Hotel, Orlando, Florida. Scott-Smith Corporation, Miami, was the installation contractor. B.F.Goodrich Chemical Company supplies the Geon rigid vinyl material only.*

Contractor tells how pipe of Geon pays off for air conditioning job

When this hotel added air conditioning, lightweight pipe made from Geon rigid vinyl really paid off. The contractor reports that only two men were needed to install the piping. He also reports that solvent cementing the pipe speeded completion of the entire operation far faster than originally expected.

In addition, the contractor expects future advantages because pipe of Geon is not subject to corrosion. Calcium carbonate won't adhere to Geon—eliminating a major cause of friction drop and pump overloading. Another advantage: savings in friction loss by use of Geon pipe permitted selection of a size smaller than ordinarily specified on jobs like this.

Conduit or pipe made from Geon offers high tensile and impact strength, too. It's another example of the way Geon polyvinyl material can make possible new or improved products. For information, write Dept. LW-1, B.F.Goodrich Chemical Company, 3135 Euclid Avenue, Cleveland 15, Ohio. Cable address: Goodchemco. In Canada: Kitchener, Ont.

A TRADE MARK OF B.F. GOODRICH CHEMICAL COMPANY
Geon
Polyvinyl Materials
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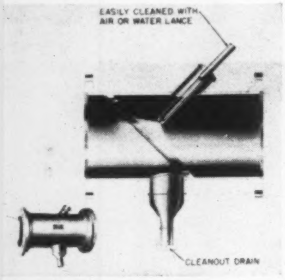
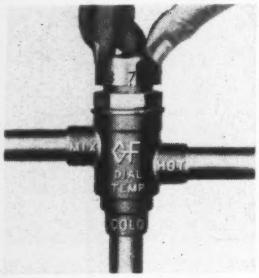
GEON polyvinyl materials • HYCAR American rubber and latex
GOOD-RITE chemicals and plasticizers • HARMON colors



Pipeline Strainers . . .

. . . designed to protect boiler feed, condensate, circulating pumps—*Leslie Co., Dept. HPAC,* 248 *Delafield Ave., Lyndhurst, N. J.*

Strainers available in 6 to 16 in. steel construction with 150 or 300 lb flanges. Strainer is self-cleaning, may be flushed by inserting air, steam, or water lance.



Mixing Valve . . .

. . . designed for adjustment of water temperature by means of graduated dial knob with integral reference numbers—*General Fittings Co., Dept. HPAC, P. O. Box* 151, *East Greenwich, R. I.*

"Dial Temp" tempering valve utilizes action of fluid-filled, expansion-actuated element to maintain desired hot water temperature over range from 110 to 180 F.

Temperature Control . . .

. . . containing two switches which may be used in place of two separate single-switch controls—*United Electric Controls Co., Dept. HPAC,* 79 *School St., Watertown* 72, *Mass.*

"Type E27A" remote bulb temperature control consists of bulb, capillary tube, bellows, control head. Temperature settings made by rotating

Columbia KWIK-BOND® 800

Clear Insulation Adhesives expressly designed for . . .

- **Bonding Insulation & Acoustical Batts to any Metal Surface**
- **Adhering Vapor-Barrier Seals**
- **Edging & Laminating Insulation**

Permanent Adhesion:

Within seconds after coating KWIK-BOND 800 to sheet metal, insulation can be applied for immediate and permanent bonding.

24 Hour "Open Tack" Time: Saves Labor Costs

Though KWIK-BOND 800 affords instant adhesion, it maintains its tack at least overnight, thus KWIK-BOND far outperforms competing adhesives in labor-saving, long open time range.

Outstanding Coverage: From 300 to 350 Square Feet Per Gallon

KWIK-BOND 800 is extremely easy to brush, roller coat, or spray on metal surfaces and insulation.

High Strength

Waterproof

Available in Clear or White Color

Withstands Wide Thermal Limits

SAVE IN LABOR AND ORIGINAL PRICE

Our 800 line includes many other adhesives for the air conditioning, heating, and refrigeration trades.

Samples and literature available upon request. Write to Dept. IA.

Columbia CEMENT CO., INC.
"QUALITY ADHESIVES SINCE 1919"
150 INGRAHAM ST., BROOKLYN, N. Y.
HYacinth 7-1450

CAPILLARY ® Air Washers

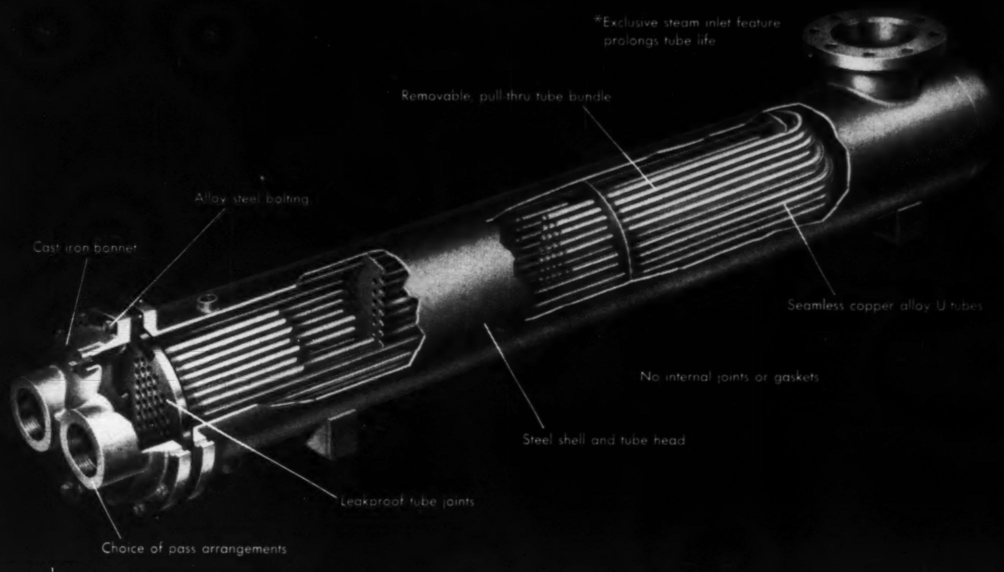
ARTICULATED UNITS

LOUVRE DAMPERS

A&R

PRODUCTS
For Air Conditioning
Write for catalog
To —
AIR & REFRIGERATION CORPORATION
439 MADISON AVENUE
NEW YORK 22, N. Y.
ATLANTA, GEORGIA
®TRADEMARK REG.

for sheer ruggedness, downright economy,
top-notch performance and widespread choice


*Exclusive steam inlet feature
prolongs tube life
Removable, pull-thru tube bundle
Alloy steel bolting
Cast iron bonnet
Seamless copper alloy U tubes
No internal joints or gaskets
Steel shell and tube head
Leakproof tube joints
Choice of pass arrangements

there's just no equal to

NEW ROSS INSTANTANEOUS HEATERS

It's a fact: The new line of Ross Instantaneous Heaters packs more benefits than any equipment of its type ever built!

Unsurpassed in efficiency, it is the product of the best heat exchanger engineering brains in the business. For over 40 years, American-Standard, Ross Heat Exchanger Division has been completely dedicated to the design and manufacture of heat transfer equipment.

Rock-bottom in economy, the new line reflects the newest thinking in cost-cutting, time-saving standardization techniques.

Rugged to the core, it is built to ASME Code requirements and utilizes durable materials throughout.

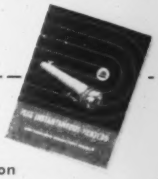
Broad in its range, it provides 128 sizes (2 and 4 pass) to meet virtually every industrial, commercial and institutional water heating requirement: service water, booster, space heating convertor, radiant heating panels and snow melting equipment, swimming pools, storage towers . . . yes, even process work involving other fluids.

American-Standard and Standard ® are trademarks of American Radiator & Standard Sanitary Corporation.

AMERICAN-Standard
ROSS HEAT EXCHANGER DIVISION

New bulletin simplifies selection

Brand new, Bulletin 304.4K1 contains complete data and specifications for selecting your own unit . . . and shows you how. Mail the coupon for your copy.



TO

American-Standard
Ross Heat Exchanger Division
Buffalo 5, N. Y.

Send your new Bulletin 304.4K1 describing Ross Type W-100 Instantaneous Heaters.

NAME

TITLE

COMPANY

ADDRESS

CITY ZONE STATE

HP 159

How to stop noise, vibration and "hammer" in water lines

THE ORIGINAL SOUNDZORBER expressly designed for use in air conditioning water lines . . .

SOUNDZORBER

A wire-reinforced wrapped fabric rubber pipe, SOUNDZORBER can be used continuously in water lines at up to 250 psi working pressure (safety factor: 5 to 1).

SOUNDZORBER

Smaller sizes ½" to 3" available with male I.P.T. bronze fittings. Larger sizes available with integral full-faced rubber flanges backed up with Series 15 or Series 30 steel flanges. No metal-to-metal contact.

SOUNDZORBER

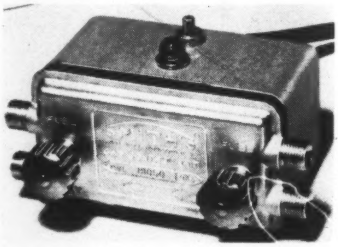
SOUNDZORBER is but one of a complete line of Finn vibration controls. Finn has control devices for every vibration problem in your field. Write for complete information.

FINN
INDUSTRIAL DIVISION

VIBRATION FINNFLEX CONTROL

T. R. FINN & COMPANY, INC.
200 Central Ave., Hawthorne, N. J.
REPRESENTATIVES wanted. If interested write or call, describing qualifications.

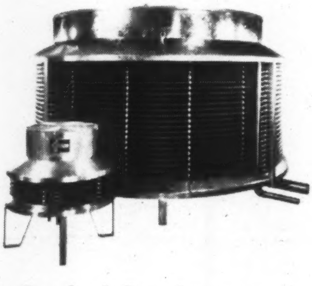
single-turn knob and pointer against calibrated scale. Models available with range spans of 100 or 200 F between limits of −150 and 650 F and with on-off differentials of approximately 1 and 2 F. Standard capillary tube length is 6 ft.



Gas Control . . .

. . . developed to regulate flow of oxygen, in welding and cutting—*Smith Welding Equipment Corp., Dept. HPAC, 2633 Forth St., S. E., Minneapolis 14.*

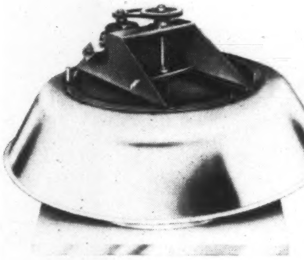
Flame settings switch automatically from high to low with "H-1050" gas control unit. Intended for silver soldering, frequent and intermittent welding, unit has capacity for operation of up to eight machine cutting torches. Can be used with standard three hose cutting setup. Unit is solenoid operated, plugs into 110 volt outlet. Valve body is of aluminum alloy. Floating ball type needle valves with plastic packing used.



Air Cooled Condenser . . .

. . . in new 100 ton size—F5 *Air Conditioning Corp., Dept. HPAC, 1815 S. Maybelle, Tulsa, Okla.*

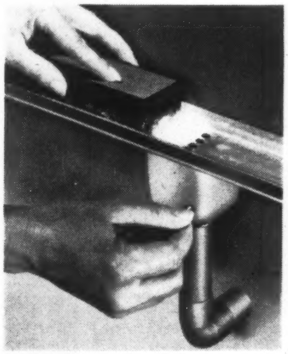
New 100 ton size in "Fandaire" line has circular coil design for counterflow and straight-through flow. Design said to eliminate pressure drop caused by return bends. Fin tube design has fins spread 8 to 1 in.; fin shoulder swaged to tube and adjoining fin. Condenser fans are cast aluminum with adjustable pitch blades; fans can be adjusted to deliver correct amount of air at altitudes to 5000 ft elevation. Units housed in 3/16 in. plate, hot dip galvanized after fabrication.



Roof and Wall Exhausters

. . . developed for all types of commercial, institutional buildings with ventilating systems requiring quiet, high capacity air movement—*Power Line Fan Co., Dept. HPAC, Plainfield, N. J.*

Among features cited by manufacturer: all aluminum construction; permanently lubricated motor; airfoil contoured wheel blades; floating wheel and drive motor; ventilated motor compartment; variable pitch pulleys; external conduit arrangement.



Vacuum Inlet Trays . . .

. . . designed for rapid removal of school room chalk dust from trays and erasers—*H-P Products, Inc., Dept. HPAC, 514 W. Gorgas St., Louisville, Ohio.*

HOW TO ISOLATE VIBRATION IN AIR CONDITIONING SYSTEMS

Here are eight practical solutions to your vibration problems

FOR ALL-PURPOSE USE

These rubber-in-shear vibration mountings are widely used for isolating vibration and noise on air conditioning equipment. Shipped complete, ready to use, their rated load is from 40 to 4000 lbs. Catalog RS-55.

FOR PUMPS COMPRESSORS, FAN-MOTOR SETS

Floating Rail vibration mountings have rubber-in-shear isolators. Rails are tapped and drilled to specification. Bases made for fan-motor sets are shipped complete, ready for installation. Catalog FR-55.

FOR SUSPENDED EQUIPMENT AND PIPING SYSTEMS

Two types of vibration hangers are available: rubber-in-shear (load range: 35 to 1500 lbs.), and steel spring (50 to 1400 lbs.). Both are extremely effective in preventing transmission of vibration from suspended equipment and piping systems. Catalog VH-55.

FOR WATER LINES

The original SOUNDZORBER. Wire-reinforced, wrapped-fabric, rubber pipe widely used for reduction of water line noise and vibration. Working pressures up to 250 psi. Sizes: ½ to 14" ID with I.P.T. male fittings or with full-faced rubber flanges backed up with Series 15 or 30 steel flanges. Catalog SZ-55.

FOR MASSIVE DIFFICULT-TO-ISOLATE EQUIPMENT

ISOLANT is an unusually strong and resilient material which provides excellent isolation of vibration, shock and noise. It is particularly suited for massive air conditioning equipment and similar machinery. Load range: up to 6000 lb. per sq. ft. Catalog IS-55.

FOR HEAVY EQUIPMENT

Steel Spring vibration mountings offer maximum vibration, shock and noise isolation of difficult-to-isolate low-speed machinery, heavy air conditioning equipment, and delicate instruments. Load range: from 100 to 6500 lbs. Catalog SS-55.

FOR FREON LINES

. . . . . a seamless flexible bronze tubing covered with woven wire braiding, is used to minimize vibration and noise in air conditioning and refrigeration freon lines. Standard copper ~~tube female~~ "slip fittings," welded on both ends, are available from ⅛" to 8" ID. Catalog FZ-55.

FOR STEAM AIR AND GAS LINES

. . . . . . a stainless steel, welded-diaphragm-type, packless expansion joint used for control of vibration, expansion and contraction in steam, chemical, oil and gas lines. Working pressure from vacuum to 1000 psi at −300 to +1800F. Sizes: ½" to 24" with steel flange or weld end fittings. Catalog EZ-55.

For complete catalog information, write—

FINN

T. R. Finn & Company, Inc., Industrial Division
200 Central Avenue, Hawthorne, New Jersey

VIBRATION FINNFLEX CONTROL

Industry's most complete line of shock and vibration controls

REPRESENTATIVES wanted. If interested write or call, describing qualifications.

If you have a VIBRATION problem VM can solve it!

• Spring Flex (Steel Spring) Vibration Mountings
• Combination Spring and Rubber-in-Shear
Vibration Hangers
• Cork-Flex Mats
• Rubber-in-Shear Mountings
• Shear-Flex Pads
• Quiet-Flex Hose
• Integral Fan and Motor Bases

Available with Neoprene Mountings or Spring-Flex Mountings and optional built-in one-piece motor slide base. Other products available: Rubber-in-Shear Mountings and Flexible Hose. Special designs furnished to suit unusual job conditions.

Yes, the RIGHT solution to vibration and noise transmission problems can almost always be found in

. . . our complete line of vibration control mountings and materials;

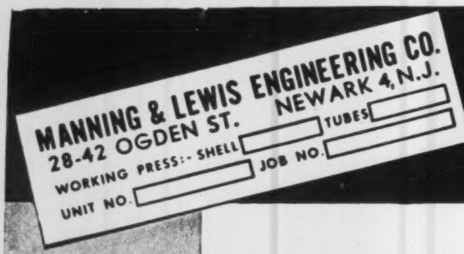
. . . the vast experience and understanding on vibration control problems of our expert engineers.

Increase operating efficiency, simplify installation, protect equipment in critical areas where noise transmission is a factor . . . ask a VM representative to call or send **us** your problem. . . DO IT TODAY! Bulletin VAC-12 "Vibration Isolation for Heating, Ventilating and Air Conditioning Equipment" is YOURS FOR THE ASKING. Write for your copy.

If it's a vibration or shock problem, get the right answer—quick—from

VIBRATION MOUNTINGS, INC.

98-11 50th Avenue, Corona 68, New York | Representatives in Principal Cities of United States and Canada


MANNING & LEWIS ENGINEERING CO.
28-42 OGDEN ST. NEWARK 4, N.J.
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TUBES
UNIT NO.
JOB NO.

FUEL OIL HEATERS WATER HEATERS and COOLERS

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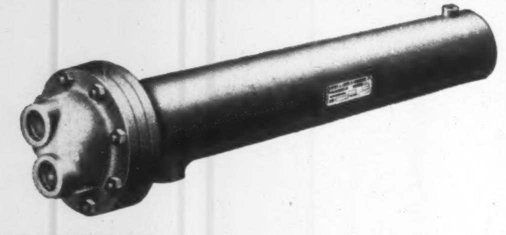
Heat Exchangers
Condensate Coolers
Heating Elements
Converters
Tank Heaters
Tankless Water Heaters
Instantaneous Water Heaters



PRESCRIBED . . .
WHERE DEPENDABILITY IS A MUST ! !

When the Alexian Brothers Hospital in Elizabeth, N. J. developed a fuel oil preheating problem, Manning & Lewis were consulted as specialists in this field. The illustrated unit was designed and fabricated to meet all necessary requirements. For years it has delivered, and continues to deliver the type of perfect service demanded of heating systems in modern hospitals — efficient, economical and completely dependable.
Dept. "D"

Manning & Lewis *Engineering Company*
DESIGNERS & MANUFACTURERS OF QUALITY HEAT EXCHANGE EQUIPMENT
28-42 OGDEN STREET NEWARK 4, NEW JERSEY
M&L

EQUIPMENT DEVELOPMENTS
Continued

"Trayvac" vacuum inlet trays clean chalk trays, erasers by pushing chalk dust to unit with eraser. Erasers cleaned dustlessly by gliding them over inlet tray.

Relief Valves . . .

. . . for water applications—*A. W. Cash Valve Mfg. Corp., Dept. HPAC, 636 E. Wabash, Decatur, Ill.*

"Type FVX" self-closing temperature, pressure relief valves intended for applications with water heaters, storage tanks, range boilers, etc. Construction: bronze body, brass working parts, heat resistant silicone seat disc, stainless steel spring. Pressure relief range is 75 to 150 psi (125 psi factory setting, unless otherwise specified); temperature relief setting is 210 F.

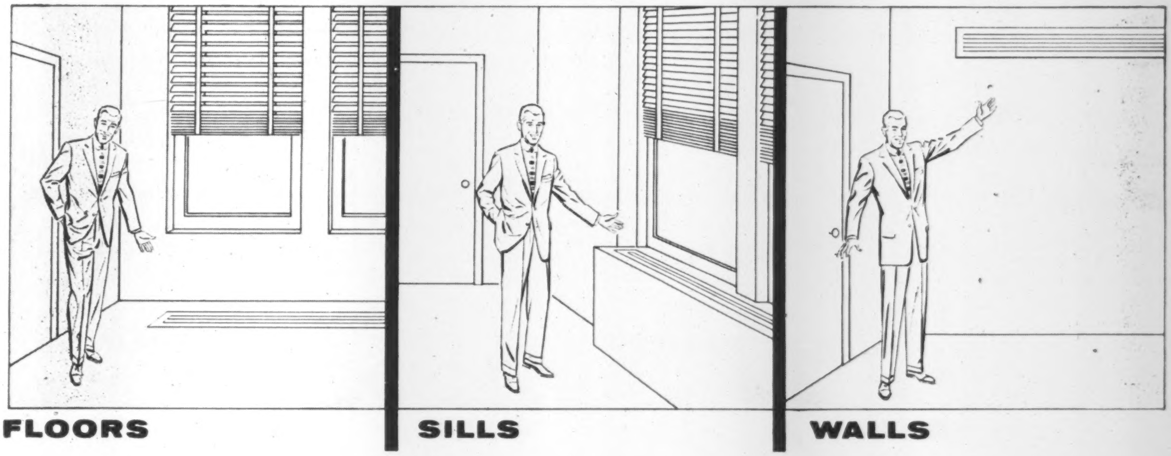
Condensing Units . . .

. . . designed for air conditioning applications requiring use of water savers—*Dunham-Bush, Inc., Dept. HPAC,* 179 *South St., West Hartford* 10, *Conn.*

"LRCU" unit is basically a standard remote air cooled condenser with motor compressor, liquid receiver, electrical controls, refrigeration accessories interconnected, installed in single unit. Dual motor compressors used in larger sizes, but separate refrigeration circuits furnished for each motor compressor. Electrical controls for dual motor compressor units supplied with time delay step-start intended to minimize startup power requirements.

Smart
Modern
Versatile

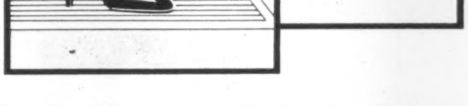
New WATERLOO Airline Grilles



New, streamlined Waterloo Airline Grilles fit perfectly into modern architectural and engineering concepts. These extruded aluminum grilles, available up to 12 feet in length in one piece construction, are excellent for every type of floor, sill and wall application.

Designed to match a wide range of architectural finishes, Waterloo Airline Grilles feature a unique bar-support method that makes them practically tamper-proof. Since these units are designed with ¼" face bars on ½" centers, they are heel and pencil proof.

Write for comprehensive Selection Guide on these new multi-purpose Waterloo Grilles.



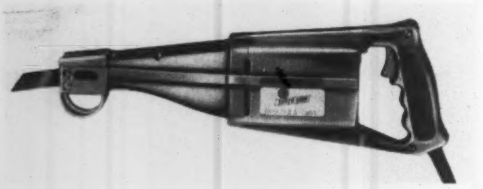
WATERLOO REGISTER COMPANY, INC.
P. O. BOX 72, WATERLOO, IOWA

WATERLOO
Air Diffusion
EQUIPMENT

WR107

EQUIPMENT DEVELOPMENTS

Continued



Power Saw . . .

. . .including carrying case, blade assortment, lubricant and blade wrench—*R. C. S. Tool Corp., Dept. HPAC, Box 661, Bloomington, Ill.*

"Model 250 Super Saw" integral unit powered by ½ hp, 2500 stroke per min motor operating on 5 amp. Features cited by manufacturer: lightweight design; no exposed moving parts; high grade ball bearings.

Electric Heat Thermostat . . .

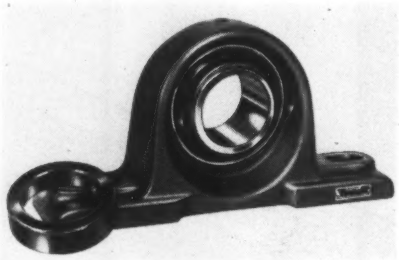
. . .designed primarily for electric baseboard, wall heaters, portable heaters, similar applications—*White-Rodgers Co., Dept. HPAC, 1209 Cass Ave., St. Louis 6.*

"Series 261" single pole, remote bulb, electric heat thermostat has differential of 1½ F. Control has range of 50 to 100 F. Suitable for mounting in ambient temperatures to 150 F. Electrical rating: 22 amp, 5000 kw, 240 volt or 2500 kw, 120 volt a-c.

Charging Cylinders . . .

. . .containing refrigerants for air conditioning installations—*Pennsylvania Engineering Co., Dept. HPAC, 1107 N. Howard St., Philadelphia 23.*

Cylinders said to be small, light easy to handle. Stacking rings designed to save storage space. No valve wrenches needed, according to manufacturer.



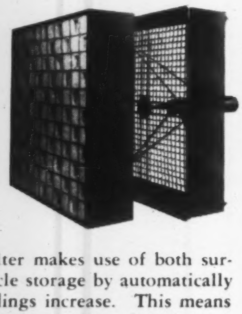
Ball Bearing Pillow Blocks . . .

. . .with redesigned housing and seals—*Fafnir Bearing Co., Dept. HPAC, 37 Booth St., New Britain, Conn.*

"LSA Standard Series" and "LSAO Heavy Duty Series" incorporate integral seal bearings. Newly designed housing said to combine greater strength with streamlined appearance. "LSA" offered in sizes to 2-15/16 in.; "LSAO" in sizes to 3-15/16 in.

EXPANSION
FOR MINIMUM MAINTENANCE

Flanders
EXPANDURE*
Filter



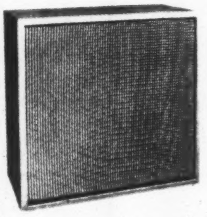
Flanders' exclusive Expandure Filter makes use of both surface area and depth for dust particle storage by automatically expanding the filter media as loadings increase. This means loadings four times greater than those achieved with conventional filters . . . cuts filter replacements by as much as 75%. Automatic action, easily replaceable.

EFFICIENCY CHART

Type Filters	ASHAE Test % by Weight	N.B.S. Discoloration Test Atmospheric Dust, % by Stain
EXPANDURE #14	85-95	65-75
EXPANDURE #15	95-99	80-90
Electrostatic Precipitation	99	85-90

*U.S. Patent Pending

COMPLETE FILTRATION FOR
SUB MICRON PARTICLES



Flanders
AIRPURE
Absolute Filters

Airpure absolute Filters combine the greatest dust holding capacity with the lowest resistance factor.

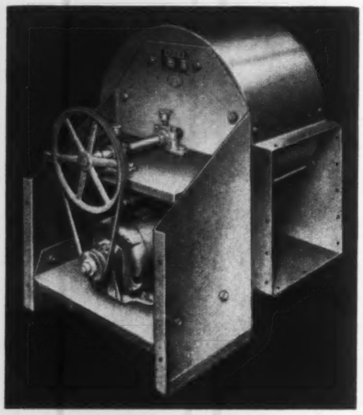
- 14% more filter medium, catches more particles
- Filter medium has no binder to clog pores
- Filter medium has low initial P.D.

Rate it either way: 1000 CFM @ .70 W.G.
1500 CFM @ 1.00 W.G.

Many models available for a wide variety of applications.

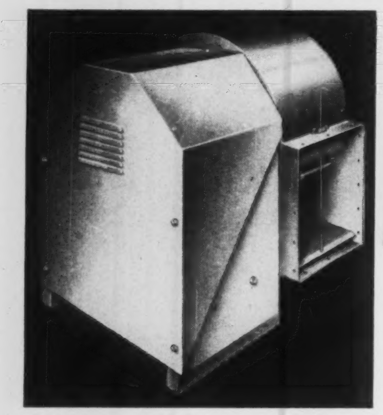
For complete information, write

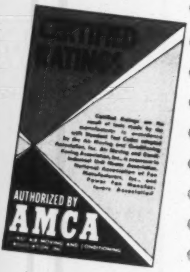
AIRPURE
FOREMOST PRODUCERS OF ABSOLUTE FILTERS FOR AEC INSTALLATIONS
Flanders Filters INC., BOX 718, RIVERHEAD, L. I., N. Y.



Aladdin
AIR HANDLING EQUIPMENT

UTILITY SETS





TEN SIZES • COMPACT • BELT DRIVEN
SELF CONTAINED • QUIET OPERATING

ALADDIN Belt-Driven Utility Sets are extremely quiet in operation. Designed for general ventilation, they occupy a minimum of space, handling large volumes of air at low noise levels. They are ruggedly built and are ideally suited for roof installation . . . when furnished with weatherproof cover they require no further protection against the weather.

ALADDIN Utility Sets are available with both forward curved or backwardly inclined blade wheels.

Write for complete data 2

ALADDIN HEATING CORPORATION
1111 WEST AVENUE 137 • SAN LEANDRO, CALIFORNIA

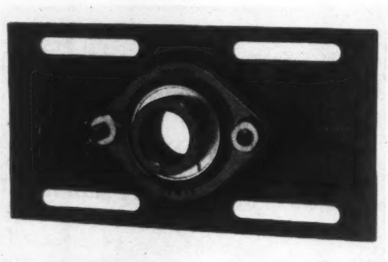
EQUIPMENT DEVELOPMENTS

Continued

Pipe Insulation . . .

. . . designed to stop condensation, insulate against heat loss, serve as vapor barrier—*Presstite-Keystone Engineering Products Co., Div. of American-Marietta Co., Dept. HPAC, 39th and Chouteau St., St. Louis, Mo.*

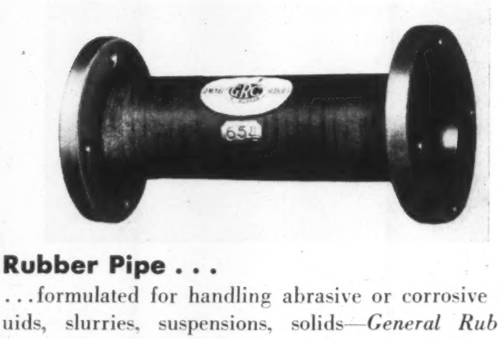
"Presst-O-Cell" tubular insulation made of expanded neoprene, consists of millions of closed cells said to permanently exclude water, moisture, air. Heat conductivity: 0.30 at 120 F. Design features cited: water and air tight; oil, acid, alkali resistant; non-flammable. Packaged in 6 ft lengths with ½ in. wall thickness for all standard pipe sizes ⅜ to 2½ in.



Ball Bearing Unit . . .

. . . available in two basic sizes covering eight different shaft dimensions—*Fafnir Bearing Co., Dept. HPAC, 37 Booth St., New Britain, Conn.*

Unit can be mounted using either guide type or bolt type methods, can accommodate misalignment without adjustment. Self-alignment feature said to offset differences in takeup on either side of shaft. Unit is sealed, permanently prelubricated, equipped with self-locking collar designed to reduce installation requirements.



Rubber Pipe . . .

. . . formulated for handling abrasive or corrosive liquids, slurries, suspensions, solids—*General Rubber Corp., Dept. HPAC, 52 Summit St., Tenafly, N. J.*

"Tuf-Flex" units available in standard sizes ½ to 72 in. ID with either duck and rubber or duck and neoprene integral full-faced flanges or integral ends. Covers furnished to resist corrosion, oils, heat, and sunlight. Made in lengths to 50 ft. ‡

RECENT TRADE LITERATURE...

▶ *AIR DISTRIBUTION*—New bulletin "30F" presents information on "Kno-Draft" air diffusers and other air handling equipment. Six air diffusers (including circular loudspeaker diffuser and slotted air diffuser) described, illustrated as to design requirements, dimensions, capacities. *Connor Engineering Corp., Dept. HPAC, Danbury, Conn.*

▶ *AIR POLLUTION CONTROL*—Illustrated, 5 page technical information booklet available from company describes techniques, methods of air pollution control. Details of procedures for use of company's membrane filter and holders in dust and aerosol analysis described in booklet. *Gelman Instrument Co., Dept. HPAC, 233 Jefferson St., Chelsea, Mich.*

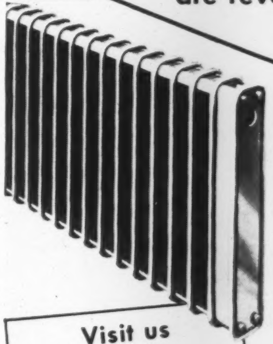
▶ *AUTOMATIC FUEL BURNER*—Illustrated 8 page brochure, "Reference Bulletin 430B" describes company's redesigned "PK-54" burner. Models pictured, details of design given in publication. *Peabody Engineering Corp., Dept. HPAC, 232 Madison Ave., New York 16.*

▶ *BOILERS*—Ratings, data, dimensions of new range of "700 Series" sectional steel boilers for commercial, industrial use combined into booklet recently issued. Publication gives construction details, features of new series in pictures, text. *Central States Boiler Co., Dept. HPAC, 4649 W. Harrison St., Chicago 44.*

▶ *CELLULAR INSULATION*—Cellular type tube and pipe insulation made of expanded neoprene and designed for refrigeration and air conditioning industries is subject of new, illustrated literature. Brochure shows cross-section of material in microphotographic closeup. *Presstite-Keystone Engineering Products Co., Dept. HPAC, 39th and Chouteau, St. Louis.*

▶ *CENTRAL AIR CONDITIONING*—New catalog "No. 7758 presents horizontal, vertical, multizone central air conditioning units for institutional, commercial, industrial uses. Construction, design of units covered in illustrated publication. *Young Radiator Co., Dept. HPAC, 709 S. Marquette St., Racine, Wis.*

▶ *CLAY PIPE*—Complete line of large diameter clay pipe, fittings presented in illustrated, 4 page folder. Different applications for pipe described, shown in publication. *Robinson Clay Product Co., Dept. HPAC, 65 W. State St., Akron 9, Ohio.*



Perkins AIRadiators offer 3 big advantages for Plant-Area Heating

① Safe heat—because it's AIRadiated wet heat
② Out-of-traffic mounting on ceilings or walls
③ Simplified installation—tapping positions are reversible

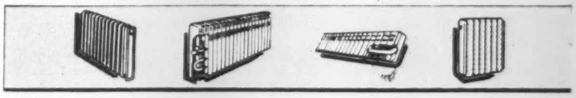
Perkins AIRadiators operate on steam or hot water to 150 psi — there are no motors, fans, or other moving parts that can cause dangerous sparking — nothing to wear or fail. They mount easily anywhere on ceilings or walls, away from equipment and traffic. Reversible tapping locations assure simplified installation in either new or existing piping layouts.

Perkins AIRadiators are made in sizes to meet every heating requirement, distribute an exact ratio of radiant and convected heat. Of rigid integral steel and copper construction, they last a plant's lifetime.

Write now for free literature. Ask for Bulletin V.

Visit us at the 14th International Heating and Air-Conditioning Exposition Convention Hall, Philadelphia Jan. 26 to 29, 1959 Booth 325

SHAW-PERKINS MFG. CO.
Properly Designed Room Heat Distribution Equipment
201 E. CARSON ST., PITTSBURGH 19, PENNA.



RECENT TRADE LITERATURE

Continued

▶ *COMBINATION FUEL BURNERS*—"AirRing" industrial burners, with built-in fuel and air systems, described in "Folder No. 5807." Packaged units available for gas, oil or dual fuel; natural or induced draft; Scotch or other type boiler. Detailed cutaway views, diagrams and photos illustrate features, details. *Iron Fireman Mfg. Co., Dept. HPAC,* 3170 *W.* 106*th St., Cleveland* 11.

▶ *CONCRETE ANCHORS*—Two illustrated color brochures present company's complete line of concrete anchors and related accessories. Drives and anchors described in text, shown in photos. Charts give necessary dimensional information. *Polis Mfg. Co., Div. of Gregory Industries, Dept. HPAC, Toledo Ave. and E. 28th St., Lorain, Ohio.*

▶ *CONTROL CABLE*—Plastic insulated and jacketed control cable is subject of 6 page folder. Listed are specifications of small diameter, station and flexible and supervisory control cables with 2 to 19 conductors. *Chester Cable Corp., Dept. HPAC,* 129 *Oakland Ave., Chester, N. Y.*

▶ *CONTROL VALVES*—Illustrated, new 12 page bulletin "LB-3" gives information on company's line of "Series LB" control valves. Booklet gives details of construction and operating characteristics of valves. Optional accessories illustrated, including handwheel operator, special construction for high and low temperature services and yoke-mounted pressure controller. *Conoflow Corp., Dept. HPAC,* 2100 *Arch St., Philadelphia* 3.

▶ *CONTROLLED VOLUME PUMPS*—Bulletin "No. 258" covers new line of company's "Milroyal" controlled volume pumps with totally enclosed drives. Bulletin presents design features, provides specifications. Pumps intended to meter chemicals against pressures to 1900 psi. *Milton Roy Co., Dept. HPAC,* 1300 *E. Mermaid Lane, Philadelphia* 18.

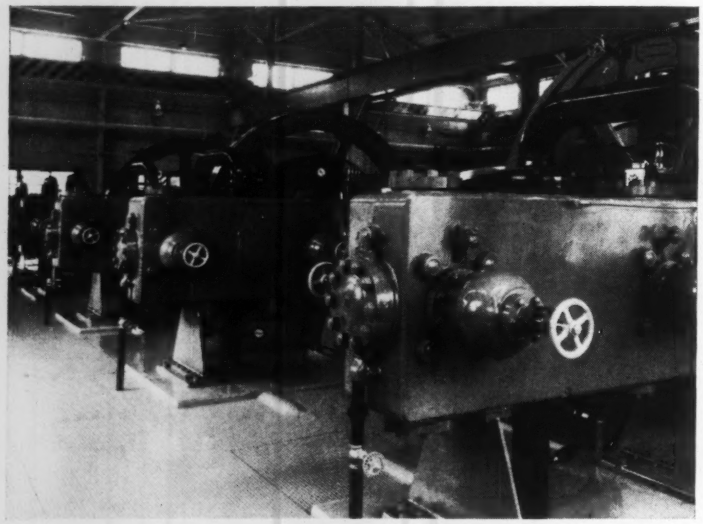
▶ *COOLING TOWERS*—"FlexiTower" with adjustable capacity presented in 8 page brochure, "Bulletin 206." Photographs, descriptions of towers, component parts and details of construction included. Four basic tower sizes cover range from 10 to 215 tons. *Baltimore Aircoil Co., Inc., Dept. HPAC, P. O. Box* 7322, *Baltimore* 27.

▶ *COOLING TOWER*—Two cooling tower models, "TG-10" and "TG-15" described in bulletin available from manufacturer. Publication includes specifications, dimensions. *Arkla Air Conditioning Corp., Dept. HPAC, Evansville, Ind.*

▶ *COUPLING*—Bulletin "61" includes diagrams, tables on "Flexring" coupling. Bulletin includes diagrams, tables on coupling available in four sizes for light hp applications

Quick Case History—reading time 39 seconds

How Hagan CS Inhibitor keeps compressors corrosion-free at UNITED FUEL GAS COMPANY



THE PLANT: Major gas company uses 1000-hp compressors to maintain high gas pressure for transmission. Eight compressor stations are involved throughout West Virginia.

THE PROBLEM: Compressor cooling water is in closed system utilizing fin fans for temperature drop. Pipes became severely corroded due to oxygen attack. At one compressor station, for example, this corrosion caused failure of 2" black iron piping on discharge side of horizontal compressors.

THE SOLUTION: Hagan CS Inhibitor is now being used in a number of compressor cooling systems. Since introduction of CS Inhibitor, no maintenance or replacement of treated system has been necessary except to repair damage which accrued before treatment was started. Cooling systems have no present problem with corrosion.

TEST RESULTS: Recent 90-day test run on 2 cycle vertical compressor engines showed a corrosion rate (mg/dm^2/day) of 0.02 for steel, 0.01 for copper. Other tests taken at the other installations have shown similar results.

GET FULL INFORMATION on how your equipment can give longer life with less maintenance and more effective operation by using Hagan CS Corrosion Inhibitor in its closed water system. Write for Bulletin No. 410-12-3.

HAGAN CHEMICALS & CONTROLS, INC.

HAGAN BUILDING, PITTSBURGH 30, PENNSYLVANIA
DIVISIONS: CALGON COMPANY, HALL LABORATORIES
IN CANADA: HAGAN CORPORATION (CANADA) LIMITED, TORONTO

RECENT TRADE LITERATURE

Continued

to 1000 rpm. *John Waldron Corp., Dept. HPAC, P. O. Box* 791, *New Brunswick, N. J.*

▶ *CROLOY TUBING*—New technical data card tells of high temperature properties of company's croloy tubing, its chemical composition, size ranges, short time tensile and rupture properties. *Babcock & Wilcox Co., Tubular Products Div., Dept. HPAC, Beaver Falls, Pa.*

▶ *DIAL THERMOMETERS*—Illustrated 12 page "Catalog 205" presents manufacturer's complete line of dial thermometers and accessories. Features of design and construction detailed in text. Models are illustrated in photos, diagrams; dimensions given in charts. *United States Gauge Div. of American Machine and Metals, Inc., Dept. HPAC, Sellersville, Pa.*

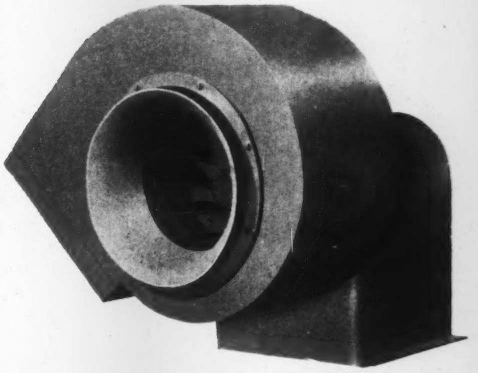
▶ *DOUBLE SUCTION PUMPS*—Bulletin "251" gives details on types "DBM" and "DB" ball bearing, horizontal split case, double suction centrifugal pumps for general water service. Publication includes specifications, sectional view, selection table, outline dimensions. *Warren Pumps, Inc., Dept. HPAC, Warren, Mass.*

▶ *DRY FLUID DRIVES*—Recently released, illustrated 24 page bulletin describes company's expanded line of dry fluid drives and couplings. Line includes 10 stock couplings and eight stock drives from fractional to 1000 hp range. "Bulletin A-640B" illustrated with product photos, engineering drawings, installation pictures. *Dodge Mfg. Corp., Dept. HPAC,* 500 *S. Union St., Mishawaka, Ind.*

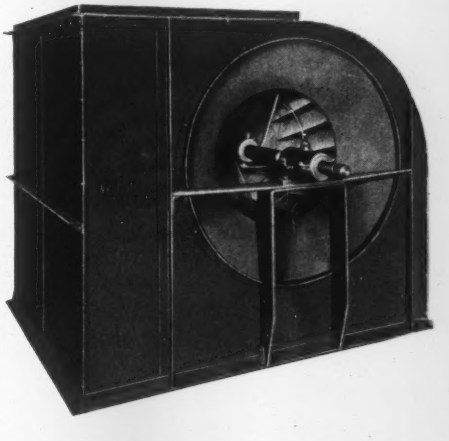
▶ *DUCT INSULATION*—Recently issued 4 page folder gives information on glass fiber duct liners, coated with black vinyl on one side to resist air erosion and duct wraps, with or without vapor barrier facings. Folder outlines features, gives description of products and properties. Graphically illustrates thermal efficiency, charts acoustical performance and gives specifications for liners and wraps. *L. O. F. Glass Fibers Co., Dept. HPAC,* 1810 *Madison Ave., Toledo* 1.

▶ *ELECTRIC HEATING*—Illustrated, 2 page bulletin "GEA-6361B" gives four steps for selecting correct industrial electrical space heater and control. Publication includes chart for determining kw hour requirements by factoring outside and inside temperature difference and building or room volume in cu ft. *General Electric Co., Dept. HPAC, Schenectady* 5, *N. Y.*

CHAMPION AIR MOVERS



In applications where quality and economy are equally important the Champion Type D Vent Set as shown above fills the bill. These rugged package units are available with highly efficient non-overloading wheels having backwardly inclined blades or wheels with forward curved blades for slow speed, quiet operation. Optionally equipped with ball or sleeve bearings, adjustable or fixed drives, with or less motor and weatherproof covers, Champion Vent Sets will give years of dependable service in any air moving installation.



Champion Type BC Fans are designed to meet general air moving requirements for ventilation, forced and induced draft or exhaust work. Available in single or double width, these heavy duty fans are made in sizes through 72" wheel diameters. A highly efficient non-overloading wheel with backwardly inclined blades, permits operation through a wide capacity range. Smaller sizes are designed for either direct or V-belt drive. All standard arrangements are available as well as accessory equipment.

CHAMPION BLOWER & FORGE CO.
LANCASTER, PA.
Representatives in principal cities

RECENT TRADE LITERATURE

Continued

▶ *FAN-COIL UNITS*—Tabulated rating data on "VRC" and "LRC" individual room air conditioners available in 9 pages of engineering data details covering four models in company's line. Chart format gives cooling capacities for chilled water and direct expansion type systems. *Drayer-Hanson, Div. of National-U. S. Radiator Corp., Dept. HPAC,* 3301 *Medford St., Los Angeles* 63, *Calif.*

▶ *FAN CURVES*—Catalog "50C8a" contains complete set of fan performance charts for company's vertical and horizontal air conditioning units, multizone units ranging from 600 to 34,000 cfm. *Recold Corp., Dept. HPAC,* 7250 *E. Slauson Ave., Los Angeles* 22.

▶ *FAN UNITS*—New 16 page catalog describes company's expanded line of medium pressure air conditioning units. Publication covers company's line of 1, 2 and 3 fan assembly units ranging from 500 to 50,460 cfm at SP to 3 in. Construction features, accessories illustrated. Capacities and dimensions of 39 sizes in horizontal, vertical models covered. *M. Blazer & Son, Dept. HPAC,* 173 *Market St., Passaic, N. J.*

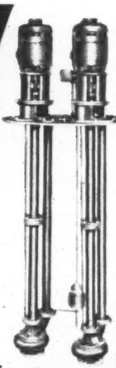
▶ *FLEXIBLE METAL HOSE*—New bulletin "N14A" gives detailed instructions on installation of all types of flexible metal hose. Illustrated with 8 diagrams to explain use of flexible connections to compensate for misalignment and eliminate vibration transmission. *Korfund Co., Inc., Dept. HPAC,* 48-01 *F and 32nd Pl, Long Island City* 1, *N. Y.*

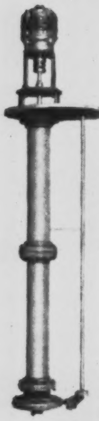
▶ *FORCED DRAFT FIRING*—New 4 page folder describes industrial packaged forced-draft firing systems for dual-fuel firing or single fuel firing of high or low pressure natural, LP or manufactured gas or oil grades from No. 2 through No. 6. Available with Scotch marine, steel firebox, water tube or cast iron boilers. Illustrations, information on nine installations included. *Iron Fireman Mfg. Co., Dept. HPAC,* 3170 *W.* 106*th St., Cleveland* 11.

▶ *FRAMING SYSTEM*—New, expanded general engineering parts catalog on bolted metal framing system covers 1400 fittings in 180 pages. Illustrations, notes aid identification of parts. Applications also covered. *Unistrut Products Co., Dept. HPAC,* 933 *W. Washington Blvd., Chicago* 7.

▶ *FUEL OIL TREATMENT*—Physical characteristics of "Formula C-8" described in new bulletin. "Formula C-8" is combination of fuel oil treatment and soot remover. Information given includes methods of handling in storage, proper feed rates, application suggestions. *Bird-Archer Co., Dept. HPAC,* 4337 *North American St., Philadelphia* 40.

Why the RIGHT PUMP COSTS LESS — When it's an American-Marsh Pump!


NKS — Duplex Vertical Non-clog Sewage and Sump. Request Bul. 325-ACP.

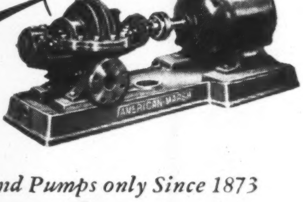

Special — Q-2 Vertical Wet Pit Centrifugal for acids and caustics.

Pumps may "look alike"— but differ enormously in performance and economy when pumping a given liquid. Sometimes this is caused by "adapting" an unsuitable pump to a job.

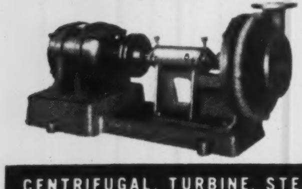
At American-Marsh, scrupulous care assures that every pump — for whatever purpose — is the *right* pump through and through!

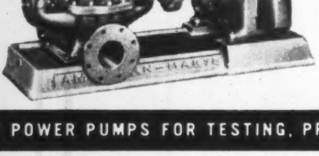
When you ask for recommendations, we analyze your problem carefully. Then we'll suggest the *right* design and size for your job . . . the *right* material for wetted parts (cast iron, bronze, stainless steel or other) . . . the *right* type of bearing, etc.

You're assured of a lasting solution to your pumping problem . . . and a pump that costs *less* for the service delivered. ***Call your A-M Representative now for recommendations.***



HHM — Two-Stage Centrifugal, Boiler Feed. Request Bul. 381CP.


RDM, Single Stage End Suction Centrifugal Request Bul. 300CP.



HLM Single Stage Centrifugal. Request Bul. 350CP.

Pumps and Pumps only Since 1873

AMERICAN-MARSH PUMPS

BATTLE CREEK MICHIGAN

CENTRIFUGAL, TURBINE, STEAM AND POWER PUMPS FOR TESTING, PROCESSING, BOILER FEED, FIRE PROTECTION, ETC.

RECENT TRADE LITERATURE

Continued

▶ *GAGE COCKS*—Illustrated, 2 page bulletin describes bronze "Renewo" weighted gage cocks as an aid to safe boiler operation. Circular "No. 183" gives instructions on installing, adjusting, renewing, reversing and replacing gage cocks. *Lunkenheimer Co., Dept. HPAC, Box* 360, *Cincinnati* 14.

▶ *GRILLES*—Selection guide to newly-developed line of "Airline Grilles" contains engineering data, design selection problems for architects, engineers, contractors. Illustrated 6 page guide presents eight types and five border styles available in line. Selection data presented in tabular form. *Waterloo Register Co., Inc., Dept. HPAC, P. O. Box* 72, *Waterloo, Iowa.*

▶ *HEATING COILS*—Recently published bulletin "No. 890" describes complete line of manufacturer's heating coils. Selection information, descriptive data on coils given. In addition to 20 illustrations, construction specifications, dimensional data, surface charts, circuiting and piping diagrams also included. *American Air Filter Co., Inc., Dept. HPAC*, 215 *Central Ave., Louisville* 8, *Ky.*

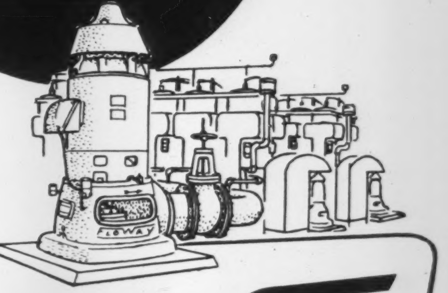
▶ *HELICAL SCREW PUMPS*—New, illustrated catalog covers line of pumps incorporating helical screw principle in design. Pumps have no vanes, turbines, impellers; single moving part turns in rubber stator to provide displacement. Publication is diagrammed, illustrated, has performance and dimensional tables. *Continental Pump Co., Dept. HPAC*, 1027 *S. Vandeventer Ave., St. Louis* 10.

▶ *HIGH VELOCITY AIR CONDITIONING*—New 24 page "Bulletin K 33-A" describes, illustrates complete line of "Series 45" high velocity valve attenuators. Technical and factual information on sound control, duct design methods, proper selection of units given with graphs, diagrams, charts. Separate scale drawings, photographs of five models given. *Connor Engineering Corp., Dept. HPAC, Danbury, Conn.*

(It was erroneously stated in these columns in the December issue that the above bulletin was being offered by Dunham-Bush, Inc.)

▶ *INSULATING CEMENT*—New, 4 page technical bulletin gives information on high efficiency insulating cement. "Cominco" cement recommended by manufacturer for high temperature insulation of boilers,

FOR
HEAVY DUTY
NO WAY BEATS
FLOWAY



FLOWAY
formerly SMITHway
VERTICAL
TURBINE PUMPS

For every rugged industrial pumping job there's a specific FloWay available to do it better. Superior materials . . . precision manufacturing . . rigid inspection . . thorough design . . each is a reason why FloWay vertical turbine pumps are setting new performance standards in industry. For assured *dependability*, inquire today for the FloWay you need—backed by two generations of experience.

DESIGNED FOR
RUGGED EFFICIENCY

FloWay capacities range from 15 to 4000 GPM. Choice of standard cast iron or fabricated steel heads. Replacement parts readily accessible from world-wide local sources.

MANUFACTURED BY
FIESE & FIRSTENBERGER MFG., Inc.
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FIESE & FIRSTENBERGER PUMPS FRESNO, CALIF.

RECENT TRADE LITERATURE

Continued

ovens, ducts, headers, turbines, valves, piping, kettles, heat exchangers, storage tanks, other industrial equipment. *United States Mineral Wool Co., Dept. HPAC, Stanhope, N. J.*

▶ *METAL HOSE CONNECTORS*—Wide selection of standard flexible metal hose connectors illustrated, decribed, priced in catalog "No. 658." New line of wet heat connectors included in catalog. Descriptions, complete specifications, installation information given. *Cobra Metal Hose, Dept. HPAC, 5059 S. Kedzie Ave., Chicago 32.*

▶ *MOTORIZED GEAR DRIVE*—Recently published 4 page bulletin "No. 2350" presents company's "Line-A-Spede" motorized gear drives. Drives are gear mounted on shelf attached to reducer. Construction features illustrated in cutaway drawing; engineering specifications, dimensions given. *Louis Allis Co., Dept. HPAC, 427 E. Stewart St., Milwaukee 1.*

▶ *MULTIZONE UNITS*—Catalog "1635-B" describes company's line of blowers for multizone central air conditioning systems. Performance, application data given, including construction details, dimensions, typical specifications. *Westinghouse Sturtevant Div., Dept. HPAC, 200 Readville St., Hyde Park, Boston 36.*

▶ *PIPE INSULATION*—Recently released 10 page brochure describes "Snap-On" pipe insulation. Design, composition, applications discussed in text of publication, shown in diagrams and photos. Dimensions, specifications of company's complete line given in series of tables. *Gustin-Bacon Mfg. Co., Dept. HPAC, 210 W. 10th St., Kansas City, Mo.*

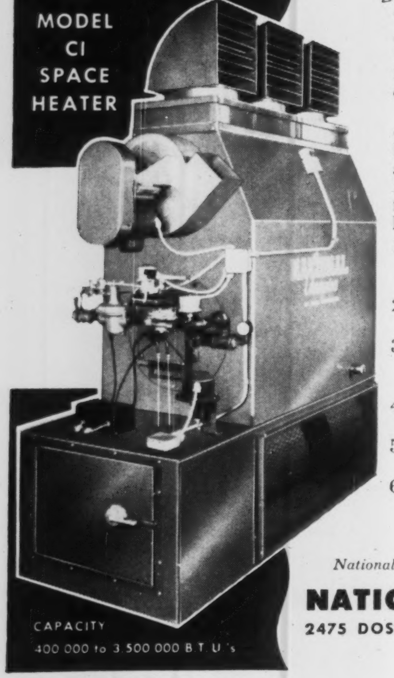
▶ *PIPE MACHINE FILM*—"Breaking the Price Barrier" is title of new 16 mm full color sound film presenting time-, cost-, work-saving advantages of "100" power drive. Film has been cleared for TV. Running time is 14 minutes. *Oster Mfg. Co., Dept. HPAC, E. 289th St. and Nickel Plate RR, Wickliffe, Ohio.*

▶ *PIPELINE STRAINER*—Bulletin "1210B" describes new line of self-cleaning, semi-steel pipeline strainers in sizes 1/4 through 3 in. Every "Type AT" strainer said to be hydrostatically tested, rated for saturated steam or liquids to 250 psi, 475 F total temperature. *Sarco Co., Inc., Dept. HPAC, 635 Madison Ave., New York 22.*

▶ *PIPING MANIFOLDS*—Production, space and cost benefits in continuous distribution of industrial gases by custom-built manifold installations described in "Industrial Piping Equipment," 28 page brochure. *National Cylinder Gas Div. of Chemetron Corp., Dept. HPAC, 840 N. Michigan Ave., Chicago 11.*

NATIONAL Champion
WARM AIR SPACE HEATERS

MODEL CI SPACE HEATER



CAPACITY 400 000 to 3 500 000 B T U 's

The ALL NEW National Champion Space Heater Has Heater-Designed Dual Fuel Burner For Optimum Unit Performance

DRAFT INDUCED BURNER UTILIZES, GAS, OIL, AND COMBINATION FUELS

The revolutionary National Champion draft induced dual fuel burner is designed specifically for the new CI Model Space Heater to insure maximum heater performance through a new high level of combustion efficiency with maintenance controlled to the minimum.

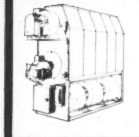
Burner will use gas, oil or a combination of gas and oil. New model delivers greater air volume at less horsepower because of streamlined blower assemblies and employment of larger wheels and scrolls. The Model CI is available in 14 sizes and has a range of from 400,000 to 3,500,000 B.T.U.'s. Check the features listed below:

1. Heat and corrosion resistant metals used throughout entire heat exchanger unit. Draft induced dual burner uses gas, oil or combination of gas and oil fuels.
2. Belt driven exhauster for maximum draft adjustment and motor life.
3. Motor compartment is separate to facilitate lubrication and adjustment. Recessed control cabinet with circuit breaker door lock for greater safety.
4. Main blowers do not start until correct bonnet temperature is reached.
5. Controls and circuit standardized—115 volt control and 220/440 volt, 3 phase main supply.
6. High velocity warm air discharge and large floor level return air louvers insure proper warm air distribution.

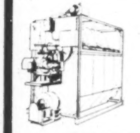
For complete details on the Model CI Heater and the full line of National Champion warm air space heaters, write today for specification sheets.

NATIONAL HEATER COMPANY, INC.
2475 DOSWELL AVENUE • ST. PAUL 8, MINNESOTA
Telephone: MIdway 6-9631

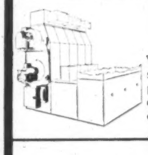
OTHER DIVERSIFIED MODELS



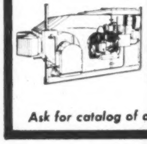
MODEL D
12 SIZES
Vertical unit for duct work.



MODEL R
12 SIZES
Inverted unit with discharge heads at bottom.



MODEL S
12 SIZES
Vertical unit with side blower to permit proper location of air mixing dampers.



MODEL C
12 SIZES
Horizontal ceiling suspension space saver unit.

Ask for catalog of our complete line

RECENT TRADE LITERATURE

Continued

▶ *PROPANE DILUTER*—Package units designed to accurately mix propane or butane with air to supply standby fuel and maintain heating, heat processing and refrigerating operations when regular supplies are curtailed—this is subject of bulletin "PD-1". Drawing shows typical installation; text gives details on automatic operation and pressure ranges available for small; medium and large installations included. *Selas Corp. of America, Dept. HPAC, Dresher, Pa.*

▶ *PROPELLER FANS*—New, 4 page, illustrated bulletin presents new, expanded line of company's "Model IC" ventura fans. Tables list 42 low pressure fans and 50 high pressure fans, giving fan speed, motor hp, quietness rating and net weight, with delivery over range of static pressure values. Installation drawings provided with dimensional data for full line of fans. *American Blower Div., American-Standard, Dept. HPAC, Detroit* 32.

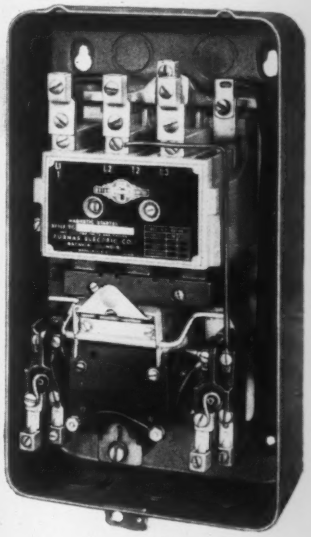
▶ *REDUCING VALVE*—Illustrated catalog sheet describes new "Type E. Fig. 198" high pressure reducing valve designed for handling large ratio pressure reductions from 6000 psi up to within 20 percent of initial pressure in one stage. Catalog sheet includes features, description, operating and ordering information with drawing and photo of valve, parts list and dimensions. *Atlas Valve Co., Dept. HPAC,* 280 *South St., Newark* 5, *N. J.*

▶ *ROTAMETER*—O-ring seal type rotameter described in specification sheet "SS-111-2" giving full design, capacity, dimension details. Rotameter has plastic tube adapters designed to permit removal and interchange of different size metering tube. *Brooks Rotameter Co., Dept. HPAC, Lansdale, Pa.*

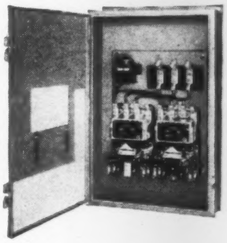
▶ *RUBBER PIPE*—Bulletin "No. 580" covers line of flexible rubber pipe developed for air conditioning, heating, piping systems. New "Type F" line of flanged pipe available in standard pipe sizes from 1 to 12 in. and in standard 12 in. face-to-face lengths. Designed for 150 and 250 psig pressures and in heat and corrosion resistant applications for handling temperatures to 210 F. *General Rubber Corp., Dept. HPAC,* 54 *Summit St., Tenafly, N. J.*

▶ *SHELL AND TUBE CONDENSERS*—New 16 page catalog "8044" presents "Heat-X CSTC" cleanable shell and tube condensers. Construction details, dimensions, selection data, performance charts included. *Dunham-Bush, Inc., Dept. HPAC,* 179 *South St., West Hartford* 10, *Conn.*

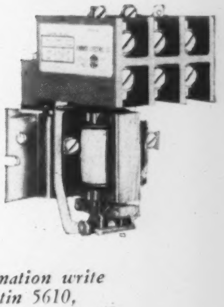
FURNAS ELECTRIC
CONTROLS HELP YOU
REDUCE COST AND
SPACE REQUIREMENTS



Magnetic Starters in 10 sizes to 100 hp. Furnas starters for control of high horsepower compressors offer the exclusive Furnas "in-between" size starters with dual voltage magnet coils.



Step or Cushion Starting permits the use of larger motors by limiting the inrush current on starting. These methods reduce or completely eliminate objectionable line disturbances due to full voltage across-the-line starting. Furnas Electric offers a complete line of Increment, Auto Transformer and Resistance-type Step Starters.



Furnas contactors feature 20, 24, 30, 35, 40, and 50 ampere sizes to match starter requirements. Silver cadmium oxide contacts for longer life. Floating armature insures quiet operation.

FURNAS

For full information write for Bulletin 5610, 1041 McKee St., Batavia, Ill.

A42

FURNAS ELECTRIC COMPANY
BATAVIA, ILLINOIS
SALES REPRESENTATIVES IN ALL PRINCIPAL CITIES

RECENT TRADE LITERATURE

Continued

▶ *STAINLESS STEEL VALVES*—Bulletin "No. 7" gives information on stainless steel valves for corrosive services. Provides data on standards, methods of rating, materials of construction, and alloy compositions. Includes design details, illustrates 36 basic valves, describes 40 variations. *Alloy Steel Products Co., Inc., Dept. HPAC, Linden, N. J.*

▶ *STAINLESS WELDING FITTINGS*—Dimensional data on company's full line of stainless steel welding fittings and flanges contained in revised catalog "TT600". New 54 page booklet includes updated technical data, allowable working pressures of fittings, pressure-temperature rating of flanges and corrosion resistance information. Suggested applications also presented. *Tube Turns, Div. of Chemetron Corp., Dept. HPAC, 224 E. Broadway, Louisville 1, Ky.*

▶ *STEAM GENERATOR*—Revised specification data sheet on marine packaged generators cover minimum specifications for company's units which has been developed specifically for marine installation. Specification sheet gives complete details on 2 pass, Scotch marine type construction of steam generator. *Cyclotherm Div., National-U. S. Radiator Corp., Dept. HPAC, 157 E. First St., Oswego, N. Y.*

▶ *STEAM GENERATORS*—New 6 page promotional color folder, entitled, "More Performance from Less Investment," describes manufacturer's line of 18 sizes of package steam generators in range from 15 to 650 hp. Specifications of 10 sizes of package hot water generators illustrated with photos, diagrams. *Cyclotherm Div., National-U. S. Radiator Corp., Dept. HPAC, 157 E. First St., Oswego, N. Y.*

▶ *STEEL AND ALUMINUM DATA*—New edition of 256 page, pocket size "Data Book" includes aluminum analyses, characteristics, mechanical properties and tolerances, in addition to previously published material on steel, including machining and fabricating data, manufacturing practices and tolerances, weights, safe loads, ASTM standards, compositions and properties. *Joseph T. Ryerson & Son, Inc., Dept. HPAC, Box 8000-A, Chicago 80.*

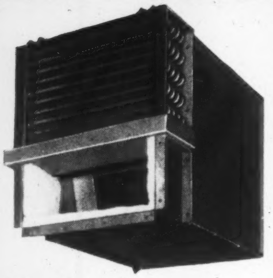
▶ *STEEL SHEETS*—Bulletin "20-1" said to be buyer's guide to every kind of sheet and strip steel. Revised bulletin lists types available for prompt shipment in form of coils, stock sizes and cut-to-order sizes. Characteristics of each type of sheet stated for comparisons. *Joseph T. Ryerson & Son, Inc., Dept. HPAC, Box 8000-A, Chicago 80.*

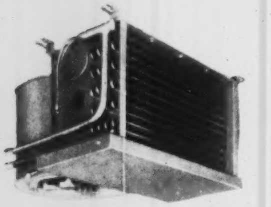
▶ *STUD CAP*—Information sheet "Form 8-437" contains photos, text illustrating installation sequence of threadless, drive-on type fastener with section drawing showing in-

The Newest and Latest for Combined Heating, Air Conditioning and Ventilating

HERE IS **COMBINEX**

The first fan coil unit that REVERSES air flow from heating to air conditioning to take advantage of natural air currents.





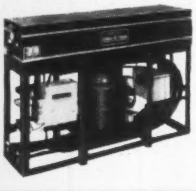
THIS IS **CONCEAL-X**

The standard fan coil unit with non-reversible air flow.

ON BOTH COMBINEX AND CONCEAL-X LARGE LOW SPEED FANS ASSURE SILENT OPERATION.

CHILLATRON

A compact, quiet operating water chiller.
Capacity 3 to 400 tons.



OTHER KRITZER PRODUCTS INCLUDE

Air Conditioning Coils
Heating Coils
Baseboard Coils
and Grills

Our latest catalog and prices should be in your files. Send for your copies.

KRITZER PRODUCTS
Since 1906

KRITZER PRODUCTS
a Division of
PEERLESS OF AMERICA, INC.
Main Factory and Offices
5800 N. Pulaski Road, Chicago 46, Ill.

stalled stud and cap retaining insulation. Engineering drawing is with dimensional data also included. Companion sheet "Form 8-437" gives test report data. *Huck Mfg. Co., Dept. HPAC,* 2480 *Bellvue Ave., Detroit* 7.

▶ *SUBMERSIBLE PUMPS*—Range of 4 in. submersible pumps with new ratings and new performances described in 4 page bulletin "B255." Publication illustrated with photos, drawings with typical pump construction and installation procedure. *Sumo Pumps Inc., Dept. HPAC,* 23 *Brown House Rd., Stamford, Conn.*

▶ *SUN SCREEN*—Illustrated 8 page booklet covers methods of preventing heat, glare from entering windows. Construction, design, applications, case histories of "KoolShade" sun screen given in text, photos. *Reflectal Corp., Dept. HPAC, Borg-Warner Bldg.,* 200 *S. Michigan Ave., Chicago.*

▶ *TANK CLEANERS*—Illustrated bulletin presents large capacity industrial tank cleaners intended for applications involving wide range of industrial cleaning problems. Units available for wet or dry pickup with full range of optional equipment. *Ace-Sycamore, Inc., Dept. HPAC,* 448 *DeKalb Ave., Sycamore, Ill.*

▶ *TRANSFORMERS*—"GEA-6723" is designation of 24 page bulletin giving complete reference for selecting small power and control, general purpose and special purpose transformers. Illustrated bulletin contains description of each type including ratings, prices, application information. *General Electric Co., Dept. HPAC, Schenectady* 5, *N. Y.*

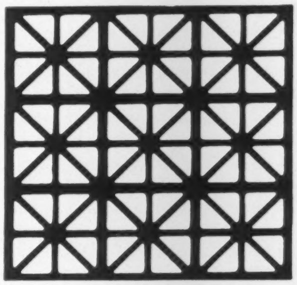
▶ *TUBING, FITTINGS*—Folder "TDC-186" is ready cross reference between type of steel, application and specifications covering product. ASTM specifications and company's special specifications included. *Babcock & Wilcox Co., Tubular Products Div., Dept. HPAC, Beaver Falls, Pa.*

▶ *TUBING IDENTIFICATION CHART*—New, illustrated color coding chart presents identification method to be used with tubing and pipe. Brochure also outlines features, applications of manufacturer's tubing and pipe. *Wolverine Tube, Div. of Calumet & Hecla, Inc., Dept. HPAC,* 17202 *Southfield Rd., Allen Park, Mich.*

▶ *UNIT VENTILATOR CONTROLS*—New, illustrated application sheets present up-to-date information

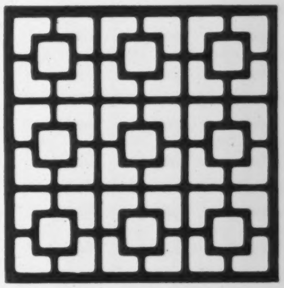
THINK OF HENDRICK for ARCHITECTURAL GRILLES

more than 100 designs to choose from



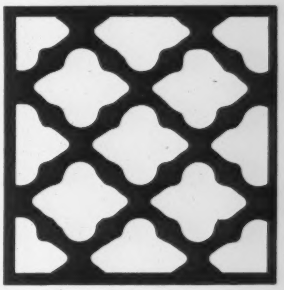
ATTRACTIVE

Hendrick Architectural Grilles combine the functional with the decorative. Many designs are obtainable only from Hendrick.



ECONOMICAL

Hendrick Grilles cost less to install and maintain than most architectural materials.



VERSATILE

Each design can be furnished in a wide range of dimensions, with varying numbers and sizes of perforations.

EASY TO INSTALL

Hendrick Grilles always lie flat . . . do not bend or warp. They provide more than enough room for free passage of air.

Write today for more information about Hendrick Grilles.

Hendrick
Manufacturing Company
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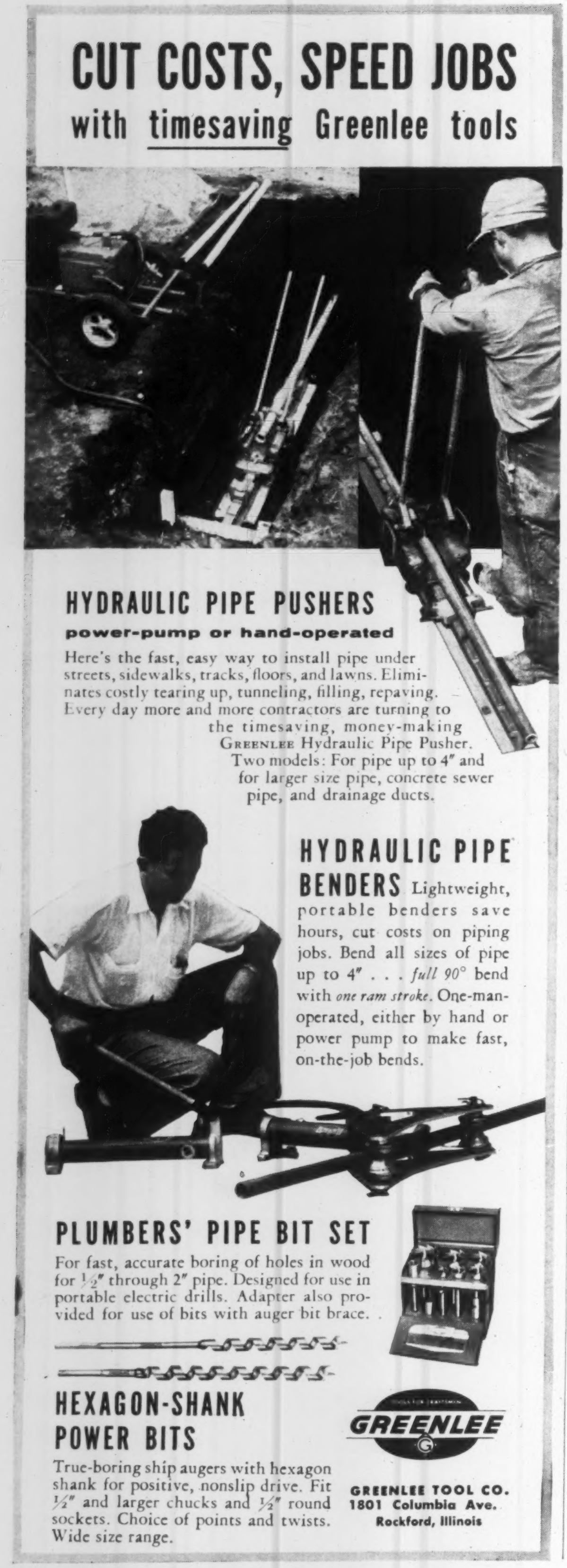
Perforated Metal • Perforated Metal Screens • Wedge-Slot Screens • Hendrick Wedge Wire Screens • Architectural Grilles • Mitco Open Steel Flooring—Shur-Site Treads • Armorgrids • Hydro Dehazers • Distillation Chemical Column Internals


CUT COSTS, SPEED JOBS
with timesaving Greenlee tools

HYDRAULIC PIPE PUSHERS
power-pump or hand-operated
Here's the fast, easy way to install pipe under streets, sidewalks, tracks, floors, and lawns. Eliminates costly tearing up, tunneling, filling, repaving. Every day more and more contractors are turning to the timesaving, money-making GREENLEE Hydraulic Pipe Pusher. Two models: For pipe up to 4" and for larger size pipe, concrete sewer pipe, and drainage ducts.

HYDRAULIC PIPE BENDERS Lightweight, portable benders save hours, cut costs on piping jobs. Bend all sizes of pipe up to 4" . . . *full 90°* bend with *one ram stroke*. One-man-operated, either by hand or power pump to make fast, on-the-job bends.

PLUMBERS' PIPE BIT SET
For fast, accurate boring of holes in wood for ½" through 2" pipe. Designed for use in portable electric drills. Adapter also provided for use of bits with auger bit brace.

HEXAGON-SHANK POWER BITS
True-boring ship augers with hexagon shank for positive, nonslip drive. Fit ½" and larger chucks and ½" round sockets. Choice of points and twists. Wide size range.

GREENLEE

GREENLEE TOOL CO.
1801 Columbia Ave.
Rockford, Illinois

RECENT TRADE LITERATURE

Continued

on automatic control of face and bypass type unit ventilators. Typical control specifications included as part of each application sheet to assist designer in preparation of control system specifications. *Barber-Colman Co., Rockford Controls Div., Dept. HPAC,* 1300 *Rock St., Rockford, Ill.*

▶ *V-BELT DRIVES*—New 12 page illustrated manual, entitled, "How to Get Longer Life from V-Belt Drives" tells how to select, install v-belts, how to detect trouble, diagnose failures, correct drive troubles. *B. F. Goodrich Industrial Products Co., Dept. HPAC, Akron, Ohio.*

▶ *VALVES*—Condensed catalog pages cover company's line of bronze, globe, angle, check, gate, radiator and specialty valves. Material listed in 12 pages for quick reference to pressure ratings, recommended uses, features, roughing-in dimension for valve in wide range of sizes. *Ohio Brass Co., Dept. HPAC,* 380 *N. Main St., Mansfield, Ohio.*

▶ *VOLTAGE STARTERS*—Design and construction features of company's automatic reduced voltage starters described in new bulletin. Line covers range from 50 to 1200 hp, 600 volts. Starting characteristic calculations, hp ratings, features of contactors, relays, fuses covered. *Allis-Chalmers Mfg. Co., Dept. HPAC, Milwaukee* 1.

▶ *WATER HEATERS, CONVERTERS*—Newly published, illustrated 8 page bulletin "J-1" includes data on company's heater, booster, converter units. Includes descriptions, model numbers, capacities, pressures, ratings, dimensions, weights, prices. *Sims Co., Dept. HPAC, Box* 1096 *PF, Erie, Pa.*

▶ *WEATHER PROTECTED MOTOR*—New 6 page bulletin "No. 2550" details new line of horizontal weather protected motors available in ratings 250 to 2000 hp. Motors recommended by manufacturer for applications such as chemical, petroleum, paper processing, public utility, others. Cutaway drawings illustrate motor construction; full motor specifications given. *Louis Allis Co., Dept. HPAC,* 427 *E. Stewart St., Milwaukee* 1.

▶ *WELDING STRESS RELIEF*—Expanded applications of "Smith-Dolan System" of low frequency induction heating are presented in new brochure. New induction heating method for stress relief in pipe welding now available for automatically controlled, precision heat treating and pre-heating. *Electric Arc, Inc., Dept. HPAC,* 152 *Jelliff Ave., Newark* 7, *N. J.* ✠

WHO'S WHAT . . .

(New personnel, promotions)

▶ *REFLECTAL CORP., SUBS. of BORG-WARNER CORP.*—James H. Ingersoll, president; R. G. Nordstrom, executive vice president; R. F. Ballou, vice president, sales.

▶ *COBRA PIPE SUPPLY AND COIL CO., INC.*—Robert Krasnow, president.

▶ *DRESSER MFG. DIV., DRESSER INDUSTRIES, INC.*—F. G. Fabian, president.

▶ *WHEATLAND TUBE CO.*—T. James Kavanagh, president.

▶ *HAMMOND VALVE CORP.*—Samuel Greenwald, president and chief executive officer.

▶ *BUFFALO FORGE CO.*—William R. Heath, president to succeed retiring president Edgar F. Wendt.

▶ *DETROIT CONTROLS DIV., AMERICAN RADIATOR AND STANDARD SANITARY CORP.*—Fillip J. Kreissl, president.

▶ *CONTROLS CO. OF AMERICA*—Albert B. Kornhauser, treasurer.

▶ *RHEEM MFG. CO.*—Robert G. Belote, vice president, industrial relations; George J. Papas, vice president, purchasing.

▶ *CARRIER CORP.*—William T. Lane, vice president in overall charge of corporate relations; Maurice J. Wilson, sales manager of commercial air conditioning of unitary equipment division; Karl Certeis, manager of development engineering department of unitary equipment division.

▶ *LESLIE CO.*—Arthur W. Richart, chief engineer of product engineering; J. Thomas Muller, manager of research and development.

▶ *CERRO DE PASCO CORP.*—Edward F. Schweich, executive vice president of *LEWIN-MATHES CO. DIV.*

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PACKLESS® will

Correct Misalignment
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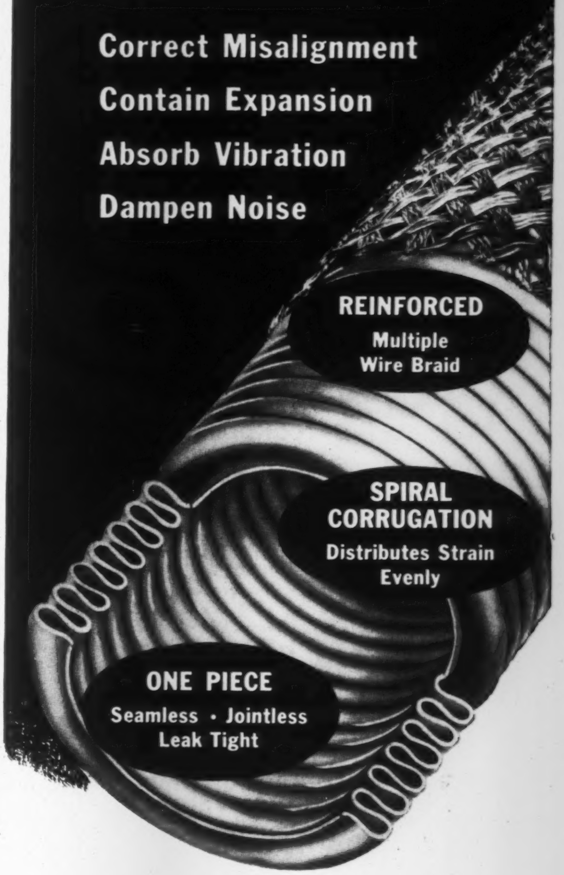
Dampen Noise



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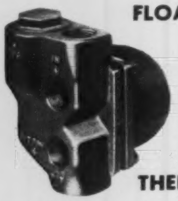
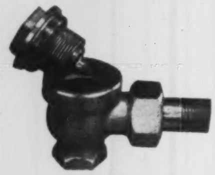
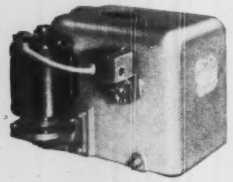
Self-contained individual radiator temperature controls for steam or hot water. Simple to install! Eliminate over-heating, save fuel. Maintain even temperature for comfort and health. Sizes: 1/2", 3/4", 1". Body styles: Angle, Straightway, Corner.



FLOAT AND THERMOSTATIC TRAPS
(69B F&T Trap Illustrated)
Compact, rugged, easy to service. "Vacuum thermostat" vents air, float valve has capacity for large amounts of condensate. Ideal for unit heaters. Sizes: 3/4", 1", 1-1/4", 1-1/2", 2". Max. Pressures: 20, 100 psi.



THERMOSTATIC RADIATOR TRAPS
Keep radiators clear of condensate and air, prevent steam waste. Dependable "Vacuum thermostat", sturdy brass bodies and covers, replaceable seats. Sizes: 1/2", 3/4", 1". Max. Pressures: 15, 65, 100, 125 psi. Body styles: Angle, Straightway, Corner, Vertical.



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4200 SERIES (Illustrated)
Neat, convenient unit with cast iron tank, dual voltage capacitator type motor, carbon-type rotary seal. Four sizes of pumps for low pressure jobs up to 15,000 sq. ft. E. D. R. and 20 lbs. pressure.
4100 SERIES — Same as above except steel tank.
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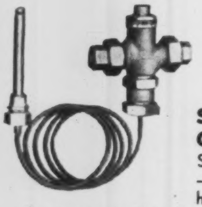

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Self-powered modulating control valve — applicable to any process involving heating or cooling by means of water, oil, steam or other fluids. Monel thermostatic and seal bellows, armored capillary tube, stainless steel trim. Mounts any position. Sizes: 1/2", 3/4", 1". Also 117A Series — 1-1/4" to 2". Heating only.

ALSO RADIATOR VALVES, CAST IRON and BRASS Y-TYPE STRAINERS

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CONDENSATION AND VACUUM PUMPS
HEATING SPECIALTIES
TEMPERATURE CONTROLS

WHO'S WHAT

Continued

▸ *AMERICAN TUBE PRODUCTS, INC.*—John Belham, vice president in charge of sales.

▸ *QUAKER RUBBER DIV., H. K. PORTER CO., INC.*—S. William Riley, chief engineer.

▸ *KEROTEST MFG. CO.*—Edward N. Wrenshall, general manager.

▸ *NATIONAL-U. S. RADIATOR CORP.*—Peter M. Sarraciocco, secretary to management advisory committee.

▸ *WALWORTH CO.*—John C. Wallace, vice president and general manager.

▸ *DOLE REFRIGERATING CO.*—Gordon L. Timbs, service manager; Arthur E. Hodson, inspector-foreman of manufacturing facilities in Oakville, Ont., Can.; Charles R. Huston, senior design engineer; Joseph P. Apple, added to staff of engineering department.

▸ *OHIO INJECTOR CO.*—Allistair Dunn, director of manufacturing; John T. Lesko, manager, manufacturing-engineering; Malcolm K. Sheppard, Jr., manager, industrial engineering.

▸ *WALWORTH CO.*—Sidney A. Lewis, manager of technical sales service.

▸ *AIRTEMP DIV., CHRYSLER CORP.*—H. Arthur Wormet, executive assistant to group executive, special products; Raymond J. Thompson, director—national service.

▸ *TUBE TURNS DIV. of CHEMETRON CORP.*—J. D. Mattimore, vice president for product engineering and research.

▸ *ALLIS-CHALMERS MFG. CO.*—Wainwright Holt, Jr., sales manager of centrifugal and axial compressors.

▸ *CALIFORNIA STATE POLYTECHNIC COLLEGE*—James M. McGrath, head of air conditioning and refrigeration engineering department.

WHO'S WHAT

Continued

▶ *MINE SAFETY APPLIANCES CO.*—Dr. William P. Yant, director of research and development elected chairman of the board of trustees of the Industrial Hygiene Foundation.

▶ *GRAVER WATER CONDITIONING CO.*—David M. Spillane, manager of power plant utilities.

▶ *LADISH CO.*—Herbert L. Pehrson, general sales manager.

▶ *WORTHINGTON CORP.*—P. G. G. Delahunt, product sales manager, "Decatur Products"; M. A. Ramsey, consulting engineer with air conditioning and refrigeration division, named to Mechanical Standards Board of American Standards Association.

▶ *ARCOS CORP.*—Dr. Gerard E. Claussen, director of research and welding engineering.

▶ *IRON FIREMAN MFG. CO.*—Warren J. Blanke, marketing manager.

▶ *JOSEPH T. RYERSON & SON, INC.*—John W. Bodwell and Robert T. Harvey, assistant general managers of sales; Albert H. Bader, assistant to the general manager; Norman Miller, manager of general order and merchandise procurement departments. Theodore G. Mates, manager of work order department; Louis G. Brinker, supervisor of merchandise records.

▶ *E. I. DU PONT DE NEMOURS & CO.*—Norman W. Kent, sales promotion manager.

▶ *ARKLA AIR CONDITIONING CORP.*—Dr. Philip P. Anderson, chief engineer.

▶ *CHEMETRON CORP.*—Edmund W. Dugan, business manager for "Girdler Catalysts" operation, named assistant director of General Industrial Equipment and Components Div. of Business and Defense Administration, U. S. Dept. of Commerce.

▶ *BABCOCK & WILCOX CO.*—Leslie S. Wilcoxson, vice president in charge of boiler division, elected to three year term as executive committee vice chairman of Enginering Foundation, Welding Research Council.

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for cutting and beveling pipe from 1½" to 36"

PATENT APPLIED FOR

PIPE CUTTING AND BEVELING MACHINES

The precision, accuracy and speed of preparing **perfectly square joints** for welding pipe from 1½" to 36" — is unequalled when you use H & M Pipe Cutting and Beveling Machines — **in the field or in the shop!**

Extremely light in weight, yet rugged enough for the toughest job, H & M Machines are simple.

Savings of one-half the cost in **labor-gas-and-time** in comparison to manual-cutting — makes H & M Pipe Cutting & Beveling Machines the most valuable equipment wherever pipe is welded!

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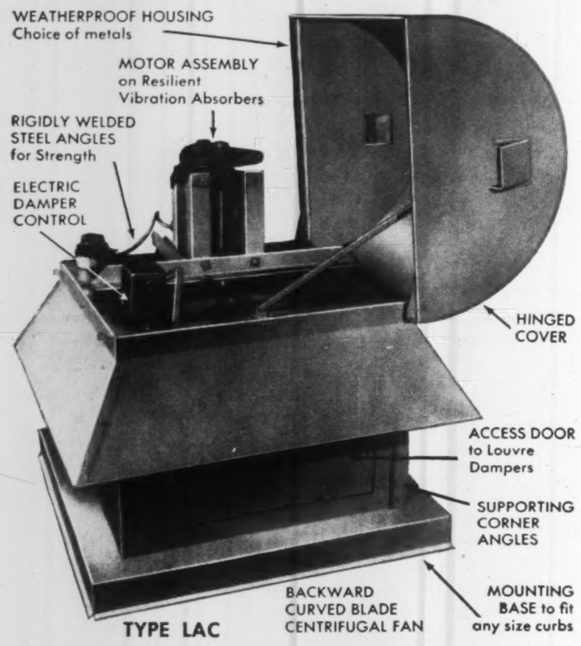
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ELECTRIC
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H-P Power Ventilators are designed to exhaust around their entire periphery with an outlet area for the highest possible efficiency. Outstanding features shown above insure years of trouble-free operation. Units are engineered for maximum performance and long life — at the right price. Many sizes and speeds to meet your requirements.

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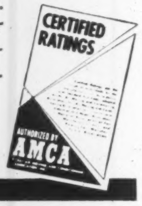
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WHO'S WHAT

Continued

▶ *ARMCO STEEL CORP.*—Robert S. Gruver, vice president of personal and public relations, elected a member of 1959 board of directors of National Association of Manufacturers; R. L. Kenyon, assistant to vice president, research; R. S. Burns, director of metallurgical research; V. W. Carpenter, director of magnetic materials research; Dr. A. L. Field, director of stainless steel research; R. L. Davidson, director of chemical research; K. Oganowski, director of metallic coatings research;

▶ *MUELLER CLIMATROL, DIV. of WORTHINGTON CORP.*—Richard L. Signorelli, assistant to vice president—manufacturing; William G. Crooker, chief engineer—cooling.

▶ *GENERAL CONTROLS CO.*—Martin J. Sherry, account executive of industrial controls division.

▶ *STERLING, INC.*—Edward W. Matthes, office manager.

▶ *WARREN BARR SUPPLY CO.*—Charles R. Bennett, manager of heating and air conditioning department.

▶ *CHASE BRASS & COPPER CO.*—Walter L. Smith, assistant to the president.

▶ *YORK DIV., BORG-WARNER CORP.*—T. J. Ammel, sales manager of "O. E. M." products; L. Williams, Jr., director of public relations.

▶ *PLUMBING-HEATING-COOLING INFORMATION BUREAU*—Howard L. Spindler, president; William A. Fitzpatrick, vice president; Victor J. Killian, treasurer; Norman J. Radder, secretary; Norman Wicks, executive director.

IN THE TERRITORIES . . .

(Recent sales appointments)

▶ *A. M. BYERS CO.*—John H. Ingalls, field service engineer in Boston division office; Robert J. Kurtz, field service engineer in Pittsburgh division office.

▶ *CLEVELAND HEATER CO.*—Engineered Sales Co., Minneapolis, manufacturer's representative in Minnesota, North and South Dakota, western Wisconsin.

WHO'S WHAT

Continued

▶ *MINE SAFETY APPLIANCES CO.*—James G. Donohue, sales engineer for Chicago territory of the company's technical products division.

▶ *DRAVO CORP.*—R. H. Sparks Co., Des Moines, Iowa, distributor for territory including a large part of Iowa and Rock Island County in Illinois.

▶ *ACME INDUSTRIES, INC.*—Charles M. Colyer, sales engineer in South Carolina; Bob Carow, sales engineer in the Texas Panhandle territory.

▶ *BLACK, SIVALLS & BRYSON, INC.*—A. L. Hacker Co., Inc., Baltimore, manufacturer's representative in Baltimore-Washington area.

▶ *FULTON SYLPHON DIV., ROBERTSHAW-FULTON CONTROLS CO.*—Charles W. Kopf, appointed secretary-treasurer and Aubrey B. Cragg, in charge of office sales and service departments of Norman Brown Co., San Francisco distributor; William H. White, district sales manager for territory including upper half of New York and Northern counties of Pennsylvania.

▶ *AIRTEMP DIV., CHRYSLER CORP.*—General Air Supply Co., Inc., Dayton, distributor in 13 Ohio and Indiana counties.

▶ *CAMBRIDGE FILTER CORP.*—R. D. Marshall & Co., Inc., Albany, N. Y., representative for northeastern New York and Berkshire County, Mass.

▶ *AMERICAN AIR FILTER CO., INC.*—John J. West, Midwest regional manager; A. B. Ullrich, Jr., southern regional manager.

▶ *NATIONAL CYLINDER GAS DIV. of CHEMETRON CORP.*— H. J. McMurtry, manager of new branch office in Tyler, Tex.; Robert L. Kirkland, manager of district office in Shreveport, La.; Vernon D. Prater, branch office manager in Augusta, Ga.; Edward D. Whitworth, manager of district office in Charlotte, N. C.; P. J. Chadwick, branch office manager in Knoxville, Tenn.

▶ *BUENSOD-STACEY, INC.*—Busch Co., Pittsburgh, representative for western Pennsylvania.

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MAKES ALL THE DIFFERENCE

in

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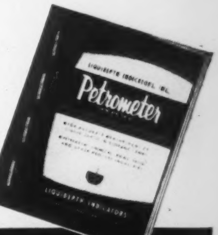
. . . and only Petrometer has it!

The patented 1410R Aerator Valve is one of the "extras" that are standard on Petrometer Remote Reading Liquid Level Indicators. The valve eliminates indication lag in high rate filling processes by by-passing low purge auxiliaries, such as bubblers or flowmeters, with large quantities of purge air or gas. It also functions as a rapid "zeroing" device for checking the zero point on the indicator scale. Or use it as a "blow down" valve to prevent stoppages where viscous or precipitating liquids are being measured.



For detailed information on Petrometer Indicators with the unique Aerator Valve write for Bulletin 6004 V.

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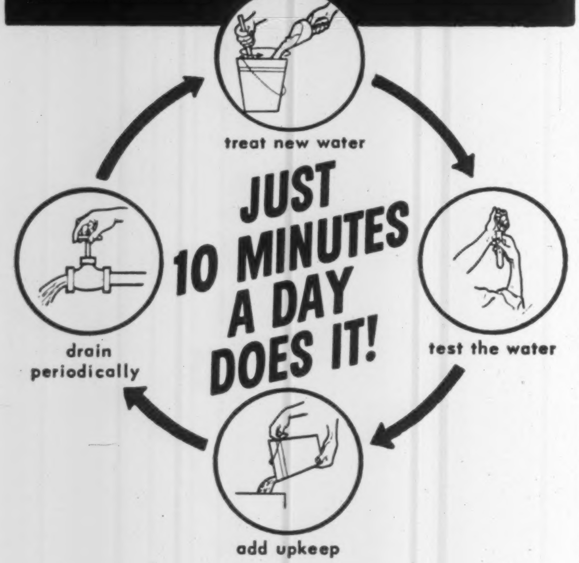
air conditioning system
water treatment



Here's servicing of air conditioner water in the easiest possible way. A routine 10 minute daily check by one man, and Oakite Airefiner No. 52 ... that's all it takes. You end scale, slime, algae and corrosion troubles. You avoid out-of-service time, and maintain cooling efficiency.

The entire operation is simplicity itself. (1) Charge water initially with economical Oakite Airefiner No. 52. (2) A simple once-a-day check of water tells whether any adjustment is needed. (3) Add upkeep, if necessary. (4) Periodically, drain system and replenish with fresh, charged water.

Oakite Airefiner No. 52 leaves no deposit on tubes, is safe, and costs little for initial charge as well as upkeep.

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Cable Address: Oakite

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WATER TREATING
materials

Technical Service Representatives in Principal Cities of U. S. and Canada

WHO'S WHAT

Continued

▶ *ARMSTRONG CORK CO.*—Lawrence P. Chubet, manager of new district office in Philadelphia.

▶ *WM. STEINEN MFG. CO.*—Associated Sales Engineers, Clearwater and St. Petersburg, Fla., representative in Florida.

▶ *AUTOMATIC DEVICES CO., INC.*—Ed. P. Fahey, representative in Chicago area.

▶ *COLT VENTILATION OF AMERICA, INC.*—Reliable Steel Supply Co., southern California distributor.

▶ *RAWLPLUG CO. INC.*—Jack Grattan, manager of Dallas office.

▶ *RECOLD CORP.*—R. E. Kenney, representative in Minnesota.

▶ *PAINE CO.*—New sales representatives: W. Edward Epperson, Richmond; Forstall & Vickery, New Orleans; Richard Grace, Orlando, Fla.; Southland Sales Agency, Memphis; J. H. Stephenson, Houston and San Antonio; R. W. Warmbold, Charlotte, N. C.; W. F. Wood Co., Dallas.

▶ *MARSH INSTRUMENT CO.*—James Kelly, midwestern district manager; Mansur Storrs, New England district manager; Don L. Warner, district manager in Philadelphia area.

▶ *BRUNER CORP.*—Frank A. Birdsong, representative for Louisiana and southern Mississippi areas.

▶ *CARRIER CORP.*—Andrew E. Feiner, manager of new Rochester branch office of Air Conditioning Wholesalers, Inc., distributor in western New York; George L. Johnston Co., Detroit, distributor for Michigan.

▶ *CARLON PRODUCTS CORP.*—Recently appointed sales agents: Mitchell-Love Co. and Standard Clay Products Corp., Philadelphia; Louis W. Appell Co., New York; Allis-Lee Sales Co., Denver; Earl E. Eckstrom & Associates, Seattle; Eric F. Chemnitz Corp., Emeryville, Calif.; Harold Torian & Associates, Dallas; Durrie Sales Co. and Carl F. Hayden & Co., Chicago; Van de Venter Engineering Co. and Hoeynck Sales Agency, St. Louis; J. Edwin Aspinall Co., Indianapolis.

▶ *ALLIS-CHALMERS MFG. CO.*—S. B. Lamica, manager of Jacksonville, Fla., district; Leo E. Engelson, manager of Rochester, N. Y., district.

WHO'S WHAT *Continued*

▶ *METAL INDUSTRIES, INC.*—Air Conditioning Supply Co., Los Angeles, exclusive distributor in southern California.

▶ *FAIRBANKS CO.*—F. H. Wilson, salesman in Delaware, Maryland, Washington, D. C. sales territory.

▶ *ILG ELECTRIC VENTILATING CO.*—P. S. Heisner, representative in Cleveland sales office; Howard D. Campbell, representative in Los Angeles sales office.

▶ *H. C. LITTLE BURNER CO., INC.*—James H. George, factory representative for Pennsylvania and parts of New Jersey and New York.

▶ *POWERS REGULATOR CO.*—J. C. Lewis Co., Little Rock, Ark., sales and installation agent.

▶ *RESEARCH PRODUCTS CORP.*—Philip Capron, sales representative for the Virginia, Maryland, Washington, D. C. area.

▶ *YORK CORP.*—Newly franchised sales representatives: Shuman Co., Charlotte, N. C.; Valley Engineering Co., Jenkintown, Pa.; Hansen's Inc., Modesto, Calif.; T. Louis Murray, Inc., Columbia, S. C., Bailey Corp., New Orleans; Super Supply Co., Inc., Greenville, S. C.

▶ *MODINE MFG. CO.*—J. F. Scouler Co., Camp Hill, Pa., sales representative for Harrisburg territory; Chas. A. Gregory and Associates, Richmond, Va., sales representative; Better Air Products Co., Baltimore, sales representative; Heet-Flo Co., Los Angeles, sales representative.

▶ *ATLAS VALVE CO.*—R. L. Crane, representative in North and South Carolina; Weedon Engineering Co., Jacksonville, Fla., representative in Florida; W. C. Christianson, representative in Mississippi; Moore Instruments, Inc., Houston, Tex., representative in Louisiana.

▶ *FISHER GOVERNOR CO.*—William H. Broomall, with Crabbe & Stebbins Co., Englewood Cliffe, N. J., sales representative in New York metropolitan and upstate areas; W. L. Gruneisen, sales engineer with B. R. Jones & Co., sales representative in southern California.

▶ *A. M. BYERS CO.*—Traverse City Iron Works, Traverse City, Mich., distributor; Ohio Pipe & Supply Co., Cleveland, distributor; Springer and Schmalz Supply, Inc., Utica, N. Y., distributor.

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**DEAERATING
IMPULSE
VACUUM
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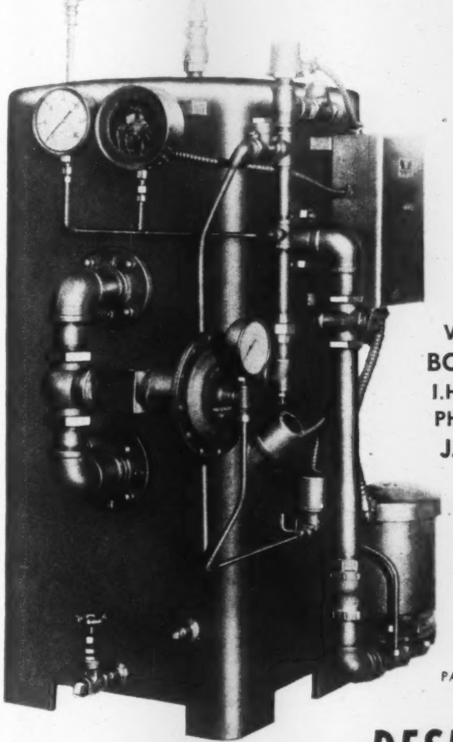
EVEN THE SMALLEST
SYSTEM CAN AFFORD**



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and
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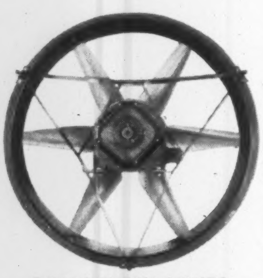
HEAVY DUTY AEROSPOT

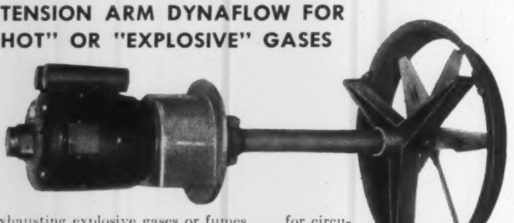
For general or specific ventilation, man-cooling, or parts-cooling . . . to increase personnel efficiency and reduce lost time in cooling and drying hot parts. Portable . . . direction of blast adjustable. Explosion-proof motor, metal conduit and starter can be supplied. Conforms to state safety regulations.



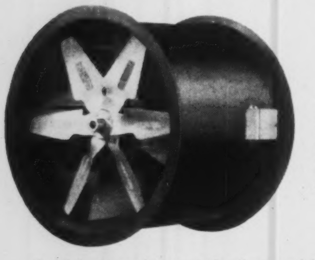
DYNAFLOW UNITS
2-4-6 BLADE TYPES

Six blade model illustrated. For exhausting or blowing against high static pressures. For general ventilation or specific processes where fumes are present. Sizes: 16" to 36" diameter. Capacities: 1240 to 26000 c.f.m. Two and four blade models available for applications at lower static pressures.

EXTENSION ARM DYNAFLOW FOR
"HOT" OR "EXPLOSIVE" GASES



For exhausting explosive gases or fumes . . . for circulating "hot" gases up to 350° F. where temperature is too high to permit use of standard or even special motors. Used in heat exchangers, "sweater" ovens, etc. Fans from 16" to 36" diameters.



DUCTYPE UNITS
Direct Drive or Belt Drive

Direct drive model shown, also supplied with belt drive for high temperatures or corrosive air and gas handling. Designed for bolting in any duct run at any point or at either end. Sizes: 16" to 36" fans.

Send for complete specifications and listings of other fans available.

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WHO'S WHAT

Continued

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▶ *MUELLER CLIMATROL, DIV. of WORTHINGTON CORP.*—Earl H. Schreiber, sales representative in Kansas and western Missouri territory.

▶ *DUNHAM-BUSH, INC.*—Raymond G. Albert, industrial sales representative in Minneapolis district.

▶ *TYPHOON AIR CONDITIONING CO., DIV. of HUPP CORP.*—Sues, Young & Brown, Los Angeles, distributor in southern California and Nevada.

▶ *JOHN WOOD CO.*—William S. Howland, eastern manager of heating sales for company's heater and tank division.

▶ *LAARS ENGINEERS*—Carns-Hoaglund Co., Phoenix, distributor for Arizona.

▶ *DRAYER-HANSON, DIV. of NATIONAL-U. S. RADIATOR CORP.*—General Equipment Co., Spokane, representative. ≠

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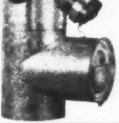

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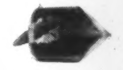

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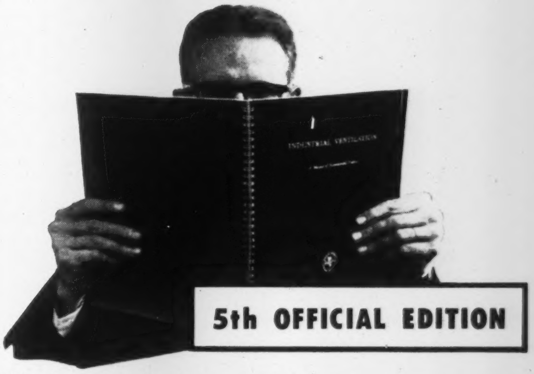

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WE HEAR THAT...

- Establishment of an infra-red division of *VAN DORN IRON WORKS CO.* for the manufacture of infra-red heaters has been announced. John S. McElwain was named as sales manager and head of the new division.

- A licensing agreement has been negotiated between *DIAMOND POWER SPECIALTY CORP.* and *A. EKSTROMS MASKINAFFAR* of Stockholm covering the latter company's shot cleaning system. The agreement gives the American company exclusive rights for the manufacture, sale and service of the system in the United States.

- A special products department has been established at *AIR REDUCTION SALES CO.* with Charles I. MacGuffie as manager. Through the new department, products requiring specialized engineering assistance in applications will be made available for industrial use.

- *REVCOR, INC.* has purchased the fan line of the *BRONSON FAN MFG. CORP.* All manufacturing operation of the new line will be moved to *REVCOR*'s Carpentersville, Ill., plant.

- *ILG ELECTRIC VENTILATING CO.* has placed an order with IBM for the "Ramac 305" computer. The new electronic "brain" will be used to coordinate production and sales functions.

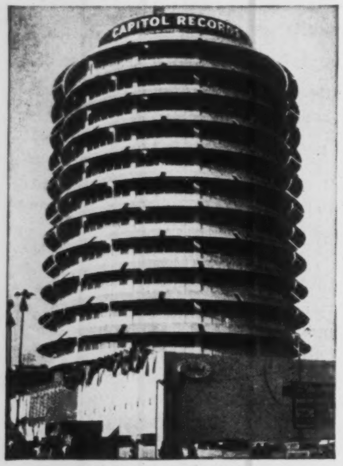
- The purchase of the *NORWALK VALVE CO.* has been announced by *ECLIPSE FUEL ENGINEERING CO.* Manufacturing will be integrated into the latter firm's plant in Rockford as soon as possible.

- *KEASBEY & MATTISON CO.* was saluted on its 85th anniversary for its pioneering role in commercial development of asbestos by the National Association of Manufacturers.

- *COCHRAN FOIL CORP.* announced plans for a $2 million expansion in its Louisville plants.

- *GEO-DRILL CO.* has been established by James L. Barrett at Bridgeville, Pa., for the manufacture of a portable diamond core drill and associated diamond bits.

- *MURRAY CORP.* has just completed additions and modernizations that nearly double its facilities. The company has consolidated all production equipment in one building.



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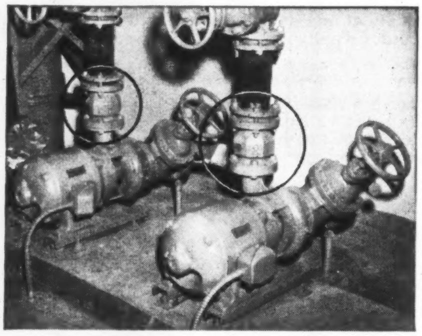

Write for literature • Agents in Principal Cities

MILLER VALVE CO., INC.

Pittsburgh 30, Pa. **Plant—1620 Pennsylvania Ave.**

WE HEAR THAT

Continued

▶ *YARNALL-WARING CO.* celebrated its 50th year of operation at its Chestnut Hill plant on September 16 and 18. Over 400 customers, suppliers, distributors and neighbors attended an "Open House" on September 16. Nearly 600 employees and their families were on hand two days later for a "Family Night" dinner.

▶ The planning, architectural and engineering firm of *PEREIRA & LUCKMAN* announced that the firm's name has been changed to *CHARLES LUCKMAN ASSOCIATES.*

▶ *JOHNS-MANVILLE CORP.* put its seventh new factory this year into production in Chicago on November 12. The new plant, operated by the corporation's *DUTCH BRAND DIV.*, is one of eight new plants in the current expansion program scheduled to be in operation in 1958, the corporation's 100th anniversary year.

▶ Twenty-four of the nation's manufacturers of unitary air conditioning equipment, representing over 75 percent of the total output of such units, have signed contracts with *AIR CONDITIONING AND REFRIGERATION INSTITUTE* to participate in a certification program designed to guarantee that unitary equipment complies with a national *ARI* standard.

▶ *CONSOLIDATED DIESEL ELECTRIC CORP.* announced that a subsidiary of the company, *HAMMOND VALVE CORP.* has acquired business and assets of *HAMMOND BRASS WORKS, INC.*

▶ The air conditioning division of *WESTINGHOUSE ELECTRIC CORP.* recently held the first sessions of a concentrated, three day training school for its franchised heat pump distributor and dealer service personnel at the Staunton, Va., plant.

▶ *FLEXONICS RESEARCH LABORATORIES*, a new division of *FLEXONICS CORP.* has been established at Elgin, Ill. The new division will provide testing and development service on a contract basis to industry and to developmental agencies of the government.

▶ *CLAYTON MFG. CO.* has moved its Cincinnati headquarters into a new facility 10 miles northeast of the city at 3051 Exon Ave., Evendale, Ohio. ‡

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FILTER UNITS FOR NEW OR

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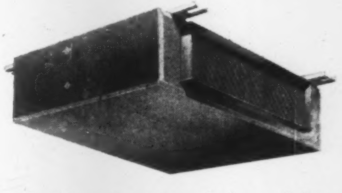
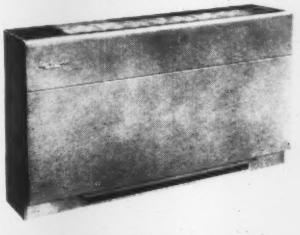
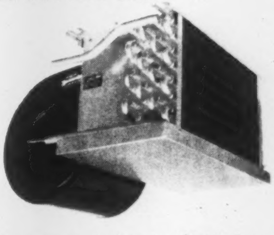


LRC's . . . basic unit, concealed or deluxe cabinet (200 thru 600 cfm)



VRC's . . . concealed or deluxe consoles (200 thru 600 cfm)



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MEETINGS & CONVENTIONS

1959

JAN. 14-15—*Building Research Institute*, conference on noise control in buildings. Hotel New Yorker, New York City. For information, contact: Building Research Institute, National Academy of Sciences—National Research Council, 2101 Constitution Ave., Washington 25, D.C.

JAN. 19-20—*Industrial Heating Equipment Association, Inc.*, meeting. Cleveland, Ohio. For information, contact: Industrial Heating Equipment Association, Inc., 1145 19th, N.W., Washington 6, D. C.

JAN. 19-20—*Compressed Gas Association*, 46th annual meeting. Waldorf-Astoria Hotel, New York. Compressed Gas Association, Inc., 11 W. 42nd St., New York 36.

JAN. 22-23—*National Association of Corrosion Engineers*, Houston short course in the practical application of corrosion control. Sponsored jointly by NACE and University of Houston. For registration, contact: William Campbell, F. H. Maloney Co., 2301 Texas Ave., Houston 2.

JAN. 26-29—*14th International Heating and Air Conditioning Exposition*. Philadelphia. Under auspices of the American Society of Heating and Air-Conditioning Engineers, in conjunction with its 65th annual meeting, also in Philadelphia. Exposition management: International Exposition Co., 480 Lexington Ave., New York 17. ASHAE headquarters: 62 Worth St., New York 13.

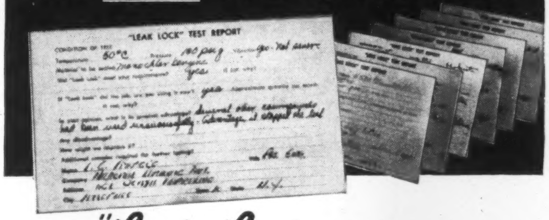
JAN. 26-29—*American Society of Heating & Air-Conditioning Engineers, Inc.*, 65th annual meeting. Bellevue-Stratford Hotel, Philadelphia. Information: A. V. Hutchinson, executive secretary, ASHAE, 62 Worth St., New York 13.

JAN. 27—*Illini* 1959 *Dinner* for Univ. of Illinois alumni in heating and air conditioning. Bellevue-Stratford Hotel, Philadelphia. 6:30 p.m. Held in conjunction with the ASHAE annual meeting. For reservations, contact: S. I. Rottmayer, 407 S. Dearborn St., Chicago 5.

JAN. 26-29—*Plant Maintenance and Engineering Show and Conference*. Cleveland Public Auditorium, Cleveland, Ohio. For information, contact: Clapp & Poliak, Inc., 341 Madison Ave., New York 17.

FEB. 2-5—*Industrial Ventilation Conference*. North Carolina State, Raleigh, N. C. For information, contact: North Carolina State College of Agriculture and Engineering, Div. of College Extension, P. O. Box 5125, Raleigh, N. C. attention: David B. Stansel.

THE PROOF KEEPS COMING IN!



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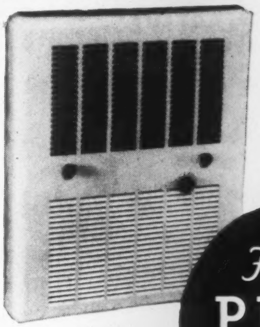

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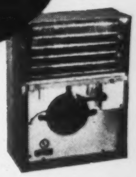

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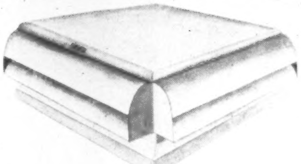

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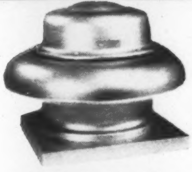
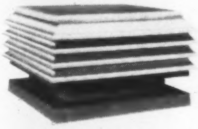
Architecturally pleasing is the TUCSON air mover. An all-steel construction provides a low silhouette centrifugal roof exhauster that is economical as well as attractive . . . exhausting capacity in the 200 to 20,000 CFM range. The finest workmanship and materials in this unit assure you of a quality product. Write today for catalog 9 which gives complete information on this and other power roof exhausters briefly described here.



COLUMBUS
Direct Drive centrifugal power roof exhauster. 100 to 1400 CFM. Boston companion series belt drive 500 to 4300 CFM.



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Air mover provides low silhouette centrifugal roof exhauster — capacity 200 to 20,000 CFM.

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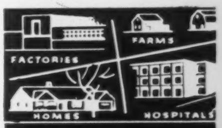

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Stop breaking through walls

Stop tearing up floors

Stop digging into frozen ground

Stop fire hazard of blow torch

Shipped complete with 40 ft. of cable. (Additional cable available for greater lengths of pipe) pipe clamps and simple operating instructions. Nothing else to buy.

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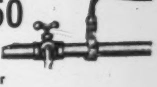

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MEETINGS & CONVENTIONS

Continued

1959

FEB. 3-5—*Society of the Plastics Industry, Inc.*, 14th SPI reinforced plastics division conference. Edgewater Beach Hotel, Chicago. SPI headquarters: 250 Park Ave., New York 17.

FEB. 16-19—*Industrial Ventilation Conference*, eighth annual meeting. Kellogg Center for Continuing Education, Michigan State University, East Lansing, Mich.

MARCH 16-20—*National Association of Corrosion Engineers*, 1959 Corrosion Show and 15th annual conference. Sherman Hotel, Chicago. National Association of Corrosion Engineers, 1061 M & M Bldg., Houston 2.

MARCH 31-*APRIL* 2—*American Power Conference*, sponsored by Illinois Institute of Technology in cooperation with a group of technical societies and other educational institutions. Hotel Sherman, Chicago. Information: R. A. Budenholzer, Mechanical Engineering Dept., Illinois Institute of Technology, 3300 Federal St., Chicago 16.

APRIL 1-3—*Gas Appliance Manufacturers Association*, annual meeting. The Greenbrier, White Sulphur Springs, W. Va. GAMA headquarters: 60 E. 42nd St., New York 17.

APRIL 5-9—*Nuclear Congress.* Cleveland Auditorium, Cleveland. Information: Engineers Joint Council, 29 W. 39th St., New York 18.

APRIL 5-9—*Edison Electric Institute*, annual convention, New Orleans. Edison Electric Institute, 420 Lexington Ave., New York 17.

APRIL 6-8—*Building Research Institute*, eighth annual meeting. Hotel New Yorker, New York City. Building Research Institute, National Academy of Sciences—National Research Council, 2101 Constitution Ave., Washington 25.

APRIL 6-10—*American Welding Society*, 40th annual meeting. Hotel Sherman, Chicago. American Welding Society, Inc., 33 W. 39th St., New York 18.

APRIL 6-10—*International Atomic Exposition*, sponsored by Atomic Industrial Forum, Inc., Cleve-

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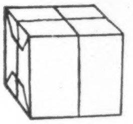

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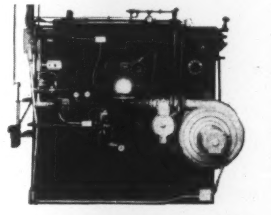
Automatic firing of *any grade* of fuel oil...guaranteed combustion performance of 12½% CO_2, without smoke...fast, simple changeover to gas when more economical...labor savings that result from complete boiler room automation...

These are some of the Calorex advantages now easily available in CALOREX PLANNED-PACKAGE BURNERS. Standard models for practically every requirement of power and steam generation — heating — hot water — steam operated floating or mobile equipment.

VALUABLE LITERATURE! Write today for free copy of new brochure on Best Planned-Package burners.

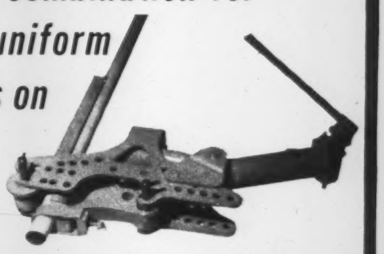


Fuel oil costs were cut nearly 1/3rd during the first year of operation of this Model R-200 Calorex Planned-Package Burner at a large uniform laundry-rental plant. Model made in two designs for both fire-tube and water-tube boilers.

CALOREX *planned-package* BURNERS

W. N. BEST COMBUSTION EQUIPMENT COMPANY
85 Industrial Avenue • Little Ferry, N. J.

the right combination for smooth, uniform 90° bends on copper tubing...



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Set No. 3-CT is complete!

Cut installation time in half by bending copper tubing up to 3" with TAL BENDER Set Number 3-CT — it's complete; Set includes basic 3" TAL BENDER; six 1" to 3" (nom.) bending shoes, bars and clamps designed specifically for hard and soft copper tubing K & L; necessary connecting parts and special bending frame all in sturdy wooden chest. High speed TAL BENDER MP-27 Motor Pump may be used for faster bending. Write for detailed Catalog No. 35, or see your plumbing and heating wholesaler for full information.

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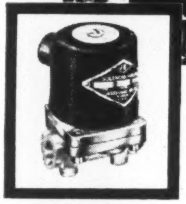

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MEETINGS & CONVENTIONS

Continued

1959

land. Information: H. F. Grebe, exhibits manager, International Atomic Exposition, Architects Bldg., Philadelphia 3.

APRIL 28-MAY 1—Mechanical Contractors Association of America, 70th annual convention. Shoreham Hotel, Washington, D. C. Mechanical Contractors Association of America, 45 Rockefeller Plaza, Suite 570, New York 20.

APRIL 29-MAY 4—Oil-Heat Institute of America, Inc., annual convention. Seattle, Wash. Oil-Heat Institute of America, Inc., 500 Fifth Ave., New York 36.

MAY 17-20—Industrial Heating Equipment Association, meeting. The Homestead, Hot Springs, Va. Industrial Heating Equipment Association, Inc., 1145 19th, N. W., Washington 6, D. C.

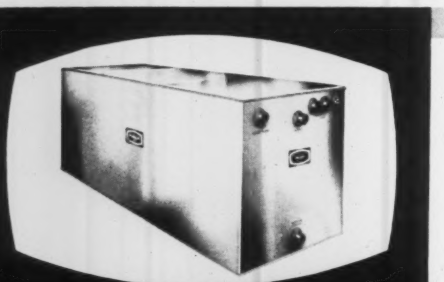
MAY 25-29—National Fire Protection Association, annual meeting, Atlantic City, N. J. National Fire Protection Association, 60 Batterymarch St., Boston, Mass.

JUNE 7-11—American Society of Heating and Air-Conditioning Engineers, semi-annual meeting. Vancouver, B. C., Can. American Society of Heating and Air-Conditioning Engineers, 62 Worth St., New York 13, N. Y.

JUNE 21-26—American Society for Testing Materials, annual meeting, Chalfonte-Haddon Hall, Atlantic City, N. J. American Society for Testing Materials, 1916 Race St., Philadelphia 3.

JUNE 22-24—American Society of Refrigerating Engineers, annual meeting. Lake Placid Club, Lake Placid, N. Y., American Society of Refrigerating Engineers, 234 Fifth Ave., New York 1.

SEPT. 21-25—Instrument Society of America, instrument-automation conference and exhibit. International Amphitheater, Chicago. For information contact: Fred J. Tabery, exhibit manager, Instrument-Automation Conference and Exhibit, 3443 S. Hill St., Los Angeles 7. ‡



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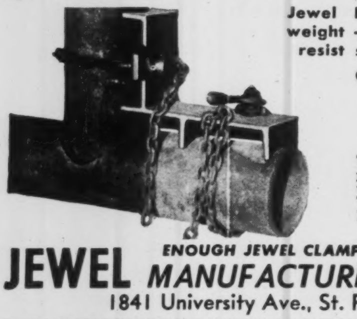

Jewel Pipe Clamps are lightweight — rigidly constructed — resist strain, heat and abuse.

CLAMPS FOR WELDING PIPE • FLANGES • ELBOWS • ANGLES —also PIPE MARKERS

These clamps align the pipe perfectly, and hold it there until it is welded. Two sizes, 1/2" to 8"; 8" to 16"

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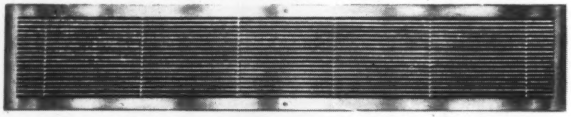

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FOR YEAR-ROUND AIR CONDITIONING

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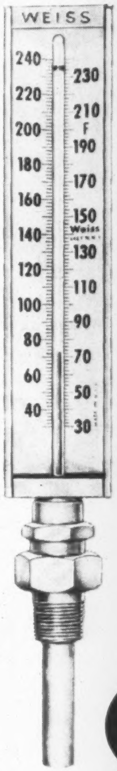

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The mercury-in-glass thermometer is basically most efficient, since it is non-mechanical. Our red-reading mercury tube coupled with a new "Permanently Marked" graduated metal scale with Jet Black numbers provide maximum accuracy and readability.

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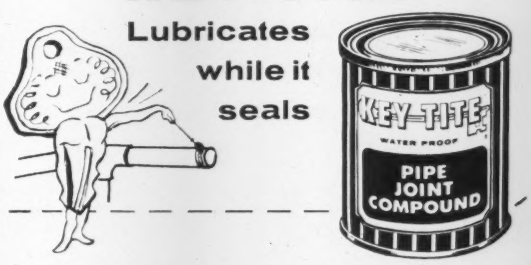

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JANUARY DIRECTORY ISSUE

Your job will be a lot easier if you'll keep this January Directory issue of Heating, Piping & Air Conditioning available for handy reference. It's one of your most valuable tools — one which will save you many hours of looking up the products you need for your various jobs. It's the ONE complete, up-to-date, readily accessible source of product information on who makes the blowers, traps, boilers, fittings, specialties of all kinds, etc., you need — and where they're located. They're identified by trade names, too. EVERY product is listed, alphabetically arranged and printed on a distinctive yellow stock for easy reading and reference. Keep it handy . . . it's a time saver.

NEW BOOKS & REPORTS...

Air Conditioning and Refrigeration—By Burgess H. Jennings and Samuel R. Lewis. 694 pp. International Textbook Co., Scranton 15, Pa. $10.50. A complete revision has been made since this book was last published in 1939 to include changes in the industry since that time. Sections dealing with the heating and cooling phases of air conditioning have been expanded. Panel systems and the heat pump are covered in a separate chapter and a separate chapter is devoted to controls and control systems. The refrigeration section includes the numbering system adopted by ASRE and a survey of compressors. Lithium-bromide absorption systems and other units are considered.

ASRE Air Conditioning—Refrigerating Data Book. Section on refrigerant piping systems covers piping materials and dimensions, equivalent lengths of valves and fittings, refrigerant flow data, refrigerant line sizing data, and general piping practice. American Society of Refrigerating Engineers, 234 Fifth Ave., New York 1. $12.00.

Air Pollution Measurements of the National Air Sampling Network. 259 pp. Public Health Service, Robert A. Taft Sanitary Engineering Center, Cincinnati 26. $2.00. ⌗

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Frees all frozen joints

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Quickly frees 'frozen' parts!

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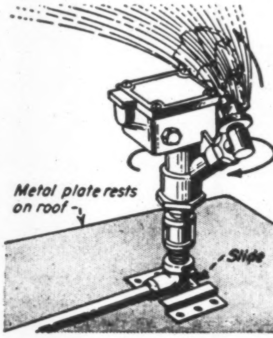
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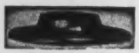

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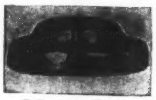

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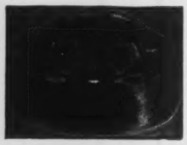

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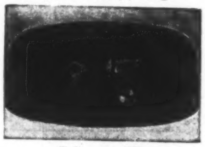

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SALES ENGINEER

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Opportunity and interesting work calling on contractors, wholesalers and manufacturers of air conditioning and refrigeration equipment.

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Starting salary based on experience plus an incentive system after indoctrination period. All replies will be kept confidential.

Send your resume under personal cover to:

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Licensee wanted for high pressure system with fundamentally new conceptions, patented in the United States and many other countries. Write for details to Key 1383A, Heating, Piping & Air Conditioning 6 N. Michigan Ave., Chicago 2, Ill.

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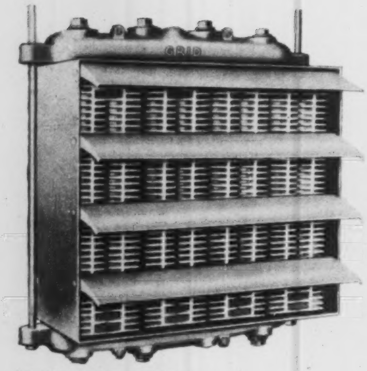
Write: Wm. Steinen Mfg. Co., Industrial Nozzle Div., 49 Bruen St., Nwk., N. J. or
See us at Booth S-18 14th Intntl. Exposition, Jan. 26 thru 29



Corrosion IN HEATING EQUIPMENT Ends WHEN YOU INSTALL – – –

CAST IRON STEAM HEAT GRID TRANSFER SURFACE

GRID HORIZONTAL BLOW UNIT HEATER DATA

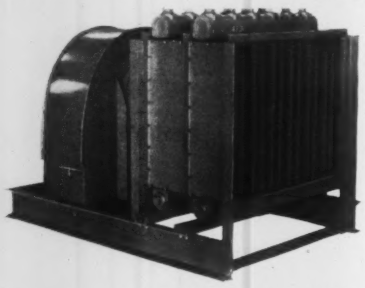
Unit Heater Model	Casing Dimension		Over all Height	Center to Center Hanger Rod	Motor		Vol. Fan Cfm	Capacities at 2 Psig Steam 60°F Ent. Air		Pipe Size		Support Rod Dia.	Approx. Ship. Wt. Lbs
	Width	Height			Hp	Rpm		Btu Per Hr	Final Temp. °F	Supply	Return		
CI-1000	13 5/8	9 13/16	15 9/16	11 3/4	1/20	1550	570	27720	103	1 1/4	1 1/4	3/8	150
CI-1200	16 7/8	12 13/16	18 9/16	15	1/12	1700	800	43320	109	1 1/4	1 1/4	3/8	210
CI-1500	15 3/8	16	24 3/8	17 1/4	1/8	1750	1500	73000	104	1 1/2	1 1/2	1/2	280
CI-1520	15 3/8	21	29 3/8	17 1/4	1/8	1750	1700	96730	112	1 1/2	1 1/2	1/2	390
CI-2000	20 1/2	21	29	22 3/8	1/6	1150	2600	134000	107	2	1 1/2	1/2	490
CI-2025	20 1/2	26	34	22 3/8	1/6	1150	2875	163900	112	2	1 1/2	1/2	520
CI-2504	25 3/4	26	35 3/8	27 1/2	1/4	1150	3300	196000	114	2	1 1/2	5/8	660
CI-2500	25 3/4	26	35 3/8	27 1/2	1/2	1150	4350	212500	104	2	1 1/2	5/8	700
CI-2530	25 3/4	31	40 3/8	27 1/2	1/2	1150	4650	262500	111	2	1 1/2	5/8	900
CI-3000	30 7/8	31	40 3/8	32 5/8	1/2	850	5900	305000	107	2 1/2	1 1/2	3/4	1020
CI-3000	30 7/8	31	40 3/8	32 5/8	1 1/2	1150	3000	362000	101	2 1/2	1 1/2	3/4	1070

29 YEARS MAINTENANCE-FREE SERVICE ON ALL TYPES OF GRID EQUIPMENT

You once and for all eliminate internal electrolytic corrosion because all metals in GRID Cast Iron Steam Heat Transfer Surface that are in contact with steam are similar . . . not 2 or 3 different metals that promote corrosion to cause leaks and breakdowns. GRID Cast Iron Steam Heat Transfer Surface also eliminates external corrosion because its cast iron construction resists acids or fumes in the air. When corrosion in heat transfer equipment ends, maintenance ends . . . it's as simple as that, no mystery, no magic, no "sales" talk. Your heating problems are no longer problems . . . you do away with high maintenance costs, repair work and the nuisance of leaky heating equipment.

GRID Cast Iron construction eliminates the use of reducing valves where high steam pressures are used. It is designed to withstand steam pressures up to 250 P.S.I. . . . 450° temperature. GRID Cast Iron Steam Heat Transfer Surface does away with replacement costs because GRID is built to last for years . . . operating successfully without maintenance in many plants since 1929. Sounds worth looking into? Then get the complete story today . . . you will be glad you did.

GRID BLAST HEATERS

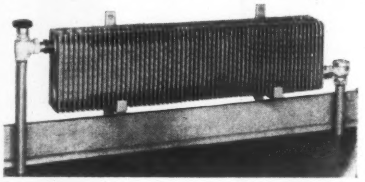


Shown In Fan Assembly

A rugged, strong, and economical heat transfer surface, GRID Blast Heaters are designed for the tough job . . . for low and high steam pressures . . . require less labor for installation, less cubical space, and being designed and made the same as GRID Unit Heaters are resistant to corrosive atmospheres . . . definitely proven for years of service and maintenance-free.

GRID CAST IRON RADIATOR WITH GRILLE

Designed for the tough applications in conjunction wih high steam pressures . . . built with the same heating sections as GRID Unit Heaters, GRID Radiators will withstand steam pressures up to 250 P.S.I. . . . particularly adaptable for shop offices, store rooms, laboratories, etc. . . . any place where smaller heating capacities than required of a unit heater are needed.



Write for complete catalog information on GRID Unit Heaters, GRID Blast Heaters, and GRID Radiation.

OFFICES IN
PRINCIPAL
CITIES
T.M. REG.
U.S. PAT. OFF.

D. J. MURRAY MANUFACTURING CO.

WAUSAU, WISCONSIN

Section of January 1959 Heating, Piping & Air Conditioning

1959 DIRECTORY

Heating, Piping, and Air Conditioning Equipment for Industrial, Commercial, Institutional and Public Buildings

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Products advertised in this issue classified in "directory style." For pages on which advertising of manufacturers in this issue appears, see pages referred to opposite manufacturers listed under products advertised in this issue. See page 171d in this Directory Section for complete listing of all advertisers.

PART 2—All Products Classified—Page 11d

All products classified alphabetically, along with names of manufacturers. (Arranged by noun governing; for example, "unit heaters" listed under "heaters, unit.")

PART 3—All Trade Names—Page 126d

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PART 4—All Manufacturers' Addresses—Page 149d

Names and addresses of all manufacturers.

Heating, Piping & Air Conditioning
6 N. Michigan Ave.
Chicago 2, Illinois

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DIRECTORY SECTION

HEATING, PIPING, AND AIR CONDITIONING EQUIPMENT FOR INDUSTRIAL AND ALL OTHER LARGE BUILDINGS

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VALVES, RADIATOR, STEAM AND HOT WATER, MODULATING

Sterling, Inc.	394

VALVES, REFRIGERATION

Alco Valve Co.	217
Henry Valve Co.	264
Sporlan Valve Co.	307, 308
Vilter Mfg. Co., The	346

VALVES, RELIEF, HOT WATER

Bell & Gossett Co.	213
McDonnell & Miller, Inc.	97
Watts Regulator Co.	119

VALVES, SOLENOID

Alco Valve Co.	217
Jackes-Evans Mfg. Co., Controls Div.	407
Sporlan Valve Co.	307, 308

VALVES, STEAM JACKETED

Everlasting Valve Co.	348

VANES, DUCT TURNING, PREFABRICATED

Cain Mfg. Co.	268

VENTILATORS, ROOF, FAN

Allen Cooler & Ventilator, Inc.	306
Ammerman Co., Inc.	316
Carnes Corp.	323
Clarage Fan Co.	10, 11
Committee on Industrial Ventilation	401
Exit-Aire Ventilating Co.	239
Gallaher Co., The	215
Greenheck Fan & Ventilator Corp.	405
Hirschman-Pohle Co., Inc.	396
Ilg Electric Ventilating Co.	289, 290, 291
Jenn-Air Products Co.	297
Octagon Ventilator Co.	105
Peerless Electric Co.	62

VENTILATORS, ROOF, WITH FUSIBLE LINK, FOR VENTING PRODUCTS OF COMBUSTION

Swartwout Co., The	292

VENTILATORS, ROOF, GRAVITY

Air Devices, Inc.	74, 75
Allen Cooler & Ventilator, Inc.	306
Colt Ventilation Co. of America Inc.	231
Committee on Industrial Ventilation	48, 401
Greenheck Fan & Ventilator Corp.	405
Hirschman-Pohle Co., Inc.	396
Octagon Ventilator Co.	105
Swartwout Co., The	292

VENTILATORS, UNIT, ELECTRIC HEATING ELEMENT

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Nesbitt, Inc., John J.	204, 205
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VENTILATORS, WALL, FAN

Barnebey-Cheney Co.	347
Ilg Electric Ventilating Co.	289, 290, 291
Jenn-Air Products Co.	297

WASHERS, AIR

Air & Refrigeration Corp.	374
Clarage Fan Co.	10, 11

WELLS, THERMOMETER

Palmer Thermometers, Inc.	368

WHEELS, BLOWER

Barry Blower Co.	222
Morrison Products, Inc.	228

WIRE, ELECTRIC, NUMBERED, FOR CONTROL SYSTEMS

Moore & Co., Samuel	229

WRENCHES, CHAIN, PIPE

Reed Mfg. Co.	314

WRENCHES, PIPE

Ridge Tool Co.	330

DIRECTORY SECTION

HEATING, PIPING, AND AIR CONDITIONING EQUIPMENT FOR INDUSTRIAL AND ALL OTHER LARGE BUILDINGS

PART 2—ALL PRODUCTS CLASSIFIED

For Complete Addresses See Part 4, p. 149d

ABSORBERS, SHOCK, LIQUID, TO ELIMINATE WATER HAMMER IN PIPING

American Metal Hose Div., The American Brass Co., Waterbury, Conn.
American Tube Products, Inc., West Warwick, R. I.
Beacon Brass Co., Waltham, Mass.
Bernstrom, Inc., C. R., Providence, R. I.
Dormont Mfg. Co., Pittsburgh, Pa.
Finn & Co., Inc., T. R., Hawthorne, N. J.
General Rubber Corp., Tenafly, N. J.
Greer Hydraulics, Inc., Jamaica, N. Y.
Hoffman Specialty Mfg. Corp., Indianapolis.
Josam Manufacturing Co., Michigan City, Ind.
LaFavorite Rubber Mfg. Co., Hawthorne, N. J.
Manufacturers Corp., Mansfield, O.
Packless Metal Hose, Inc., Mt. Vernon, N. Y.
Ra-Rich Mfg. Corp., Holtsville, Long Island, N. Y.
United Metal Hose Co., Inc., Long Island City, N. Y.
Vibration Mountings, Inc., Corona, N. Y.
Wade Mfg. Co., Elgin, Ill.
Zurn Industries, Inc., Erie, Pa.

ABSORBERS, SOUND, DUCT SECTION, PREFABRICATED, FOR NOISE CONTROL IN DUCT SYSTEMS

Celotex Corp., The, Chicago, Ill.
Elof Hansson, Inc., Acoustical Div., New York, N. Y.
General Sound Control, Inc., Los Angeles, Calif.
Industrial Sound Control Dept. of Koppers Co., Inc., Metal Products Co., Baltimore, Md.
Insul-Coustic, Inc., Maspeth, L. I., N. Y.
International Aer Acoustics, New York, N. Y.
LaFavorite Rubber Mfg. Co., Hawthorne, N. J.
Owens-Corning Fiberglas Corp., Toledo, O.
United Sheet Metal Co., Inc., Columbus, O.

ABSORBERS, VIBRATION

See Hose, Flexible, Metal and Fittings; Bases Vibration Isolating, Pad Type; Bases, Vibration Isolating, Spring Type; Connectors, Duct, Flexible

ABSORBERS, VIBRATION, FOR REFRIGERANT AND OTHER PIPE LINES

American Metal Hose Div., The American Brass Co., Waterbury, Conn.
Atlantic Metal Hose Co., Inc., New York, N. Y.
Blaw Knox Co., Power Piping & Sprinkler Div., Pittsburgh, Pa.
Cobra Metal Hose Div., D-K Mfg. Co., Chicago, Ill.
Fabreeka Products Co., Inc., Boston, Mass.
Finn & Co., Inc., T. R., Hawthorne, N. J.
Flexonics Corp., Maywood, Ill.
General Rubber Corp., Tenafly, N. J.
Johnson Metal Hose, Inc., Waterbury, Conn.
Korfund Co., Inc., Long Island City, N. Y.
MB Mfg. Co., New Haven, Conn.
Packless Metal Hose, Inc., Mt. Vernon, N. Y.
Pennsylvania Flexible Metallic Tubing Co., Philadelphia, Pa.
Resistoflex Corp., Roseland, N. J.
Saussé & Co., M.W., Los Angeles, Calif.
Seamlex Co., Inc., Long Island City, N. Y.
U. S. Flexible Metallic Tubing Co., Los Angeles, Calif.
United Metal Hose Co., Inc., Long Island City, N. Y.
United States Rubber Co., New York, N. Y.
Universal Metal Hose Co., Chicago, Ill.
Vibration Mountings, Inc., Corona, N. Y.
Wade Mfg. Co., Elgin, Ill.
Williamson Co., The, Cincinnati, O.

ABSORPTION DEHUMIDIFIERS

See Dehumidifiers, Absorption and Adsorption

ABSORPTION REFRIGERATION MACHINES

See Machines, Refrigeration, Absorption

ACCESS DOORS AND PANELS

See Doors and Panels, Access

ACCUMULATORS, REFRIGERATION (FOR AIR CONDITIONING)

Bohn Aluminum & Brass Corp., Detroit.
Dean Thermo-Panel Coil Div., Dean Products, Inc., Brooklyn, N. Y.
Dole Refrigerating Co., Chicago, Ill.
Frick Co., Waynesboro, Pa.
Kenmore Machine Products, Inc., Lyons, N. Y.
McQuay, Inc., Minneapolis, Minn.
Patterson-Kelley Co., Inc., The, East Stroudsburg, Pa.
Phillips & Co., H. A., Chicago, Ill.
Reco Products Div., Recony Corp., New York, N. Y.
Refrigeration Research, Inc., Brighton, Mich.
Remco, Inc., Zelienople, Pa.
Superior Valve and Fittings Co., Pittsburgh, Pa.
Vilter Mfg. Co., The, Milwaukee, Wis.
Wabash Corp., Chicago, Ill.
Watkins Co., J. E., Maywood, Ill.
Weatherhead Co., The, Ft. Wayne Div., Ft. Wayne, Ind.
Wolverine Tube, Div. of Calumet & Helca, Inc., Allen Park, Mich.
XL Refrigerating Co., Chicago, Ill.
York Corp., Subsidiary of Borg-Warner Corp., York, Pa.

ACOUSTICAL TREATMENT FOR DUCTS

See Absorbers, Sound, Duct Section, Prefabricated, for Noise Control in Duct Systems; Insulation, Duct, Sound Deadening

ADHESIVES, FOR INSULATION OTHER THAN PIPE

Adhesive Products Corp., New York, N. Y.
Asbestos Asphalt Insulation Co., Chicago, Ill.
Armstrong Cork Co., Lancaster, Pa.
Arno Adhesive Tapes, Inc., Michigan City, Ind.
Atlas Mineral Products Co., Mertztown, Pa.
Cain Mfg. Co., Birmingham, Ala.
Carey Mfg. Co., Philip, Lockland, Cincinnati, O.
Chemical Coatings & Engineering Co., Media, Pa.
Columbia Cement Co., Brooklyn, N. Y.
Cordo Chemical Corp., Norwalk, Conn.
Dennis Chemical Co., St. Louis, Mo.
Dow Corning Corp., Midland, Mich.
Durkee-Atwood Co., Minneapolis, Minn.
Duro-Dyne Corp., Farmingdale, Long Island, N. Y.
Eagle-Picher Co., Cincinnati, O.
Flintkote Co., The, New York, N. Y.
Formica Corp., The, Cincinnati, O.
Forty-Eight Insulations, Inc., Aurora, Ill.
Fuller Co. of Calif., H. B., So. San Francisco, Calif.
Fuller Co., H. B., St. Paul, Minn.
Gilbreth Co., The, Philadelphia, Pa. (Teflon)
Goodrich Industrial Products Co., B. F., Akron, O.
Grant Wilson, Inc., Chicago, Ill.
Insul-Coustic, Inc., Maspeth, Long Island, N. Y.
Johns-Manville, New York, N. Y.
Minnesota Mining & Mfg. Co., Adhesives & Coatings Div., Detroit, Mich.
Miracle Adhesives Corp., Bellmore, N. Y.
Moore Inc., Goodloe E., Danville, Ill.
National Cork Co., Englewood, N. J.
Presstite-Keystone Engineering Products Co., A Div. of American-Marietta Co., St. Louis, Mo.
Rubber & Asbestos Corp., Bloomfield, N. J.
Schwartz Chemical Co., Inc., Long Island City, N. Y.
Silvercote Products, Inc., Chicago, Ill.
St. Clair Rubber Co., Detroit, Mich.
Stic-Klip Mfg. Co., Inc., Cambridge, Mass
Swift & Co., Adhesive Products Dept., Chicago, Ill.
Taft Jenkins Co., Inc., Holyoke, Mass.
Xylos Rubber Co., Akron, O.

ADHESIVES, FOR PIPE COVERING

Adhesive Products Corp., New York, N. Y.
Arabol Mfg. Co., New York, N. Y.
Armstrong Cork Co., Lancaster, Pa.
Arno Adhesive Tapes, Inc., Michigan City, Ind.
Asbestos Asphalt Insulation Co., Chicago, Ill.
Cain Mfg. Co., Birmingham, Ala.
Carey Mfg. Co., Philip, Lockland, Cincinnati, O.
Chemical Coatings & Engineering Co., Media, Pa.
Durkee-Atwood Co., Minneapolis, Minn.
Duro-Dyne Corp., Farmingdale, Long Island, N. Y.
Dyfoam Corp., Newcastle, Pa.
Flintkote Co., The, New York, N. Y.
Foster Co., Benjamin, Philadelphia, Pa.
Fuller Co. of Calif., H. B., So. San Francisco, Calif.
Glo-Brite Products Inc., Chicago, Ill.
Goodrich Industrial Products Co., B. F., Akron, O.
Grant Wilson, Inc., Chicago, Ill.
Industrial Laminates Div., Fabric Distributing Co., New York, N. Y.
Insul-Coustic, Inc., Maspeth, L. I., N. Y.
Johns-Manville, New York, N. Y.
Keasbey & Mattison Co., Ambler, Pa.
Minnesota Mining & Mfg. Co., St. Paul, Minn.
Minnesota Mining & Mfg. Co., **Adhesives & Coatings Div., Detroit, Mich.**
Miracle Adhesives Corp., Bellmore, N. Y.
Moore Inc., Goodloe E., Danville, Ill.
Mystik Adhesive Products, Inc., Chicago, Ill.
National Cork Co., Englewood, N. J.
Pecora Inc., Philadelphia, Pa.
Presstite-Keystone Engineering Products Co., A Div. of American-Marietta Co., St. Louis, Mo.
Rubber & Asbestos Corp., Bloomfield, N. J.
Ruberoid Co., New York, N. Y.
St. Clair Rubber Co., Detroit, Mich.
Sauereisen Cements Co., Pittsburgh, Pa.
Spring Packing Corp., Chicago, Ill.
Standard Asbestos Mfg. Co., Chicago, Ill.
Swift & Co., Chicago, Ill.
Taft Jenkins Co., Inc., Holyoke, Mass.
Tropical Tape Div., Fort Lauderdale, Fla.
Xylos Rubber Co., Akron, O.

ADSORBERS, ODOR, FOR DUCT SYSTEMS

Barnebey-Cheney Co., Columbus, O.
Conner Engineering Corp., Danbury, Conn.
Easton R. S. Corp., Brooklyn, N.Y.
Elgin Softener Corp., Elgin, Ill.
Lord & Clark Co., Inc., Boston, Mass.
Manning Co., Charles E., Pittsburgh, Pa.
Oshkosh Filter & Softener Co., Oshkosh, Wis. (from water supply)
Puritron Corp., New Haven, Conn.
Radex Corp., Chicago, Ill.
Research Products Corp., Madison, Wis.
United States Stoneware Co., Plastics & Synthetics Div., Akron, O.
Williams Chemical Co., New York, N. Y.

ADSORPTION DEHUMIDIFIERS

See Dehumidifiers, Absorption and Adsorption

AFTERCOOLERS, COMPRESSED AIR

Acme Industries, Inc., Jackson, Mich.
Adams Co., Inc., R. P., Buffalo, N. Y.
Adsco Div., Yuba Consolidated Industries, Inc., Buffalo, N. Y.
American Moistening Co., Cleveland, N. C.
Andale Co., Philadelphia, Pa.
Armstrong Co., Richard M., West Chester, Pa.
Binks Mfg. Co., Chicago, Ill.
Bury Compressor Co., Erie, Pa.
Buxton Mfg. Co., Dover, N. J.
Centrifix Corp., Cleveland, O.
Chicago Pneumatic Tool Co., New York, N. Y.
Condenser Service & Engineering Co. Inc., Hoboken, N. J.
Curtis Mfg. Co., Refrigeration Div., St. Louis, Mo.
Davis Engineering Corp., Elizabeth, N. J.
Downingtown Iron Works, Inc., Div. of Pressed Steel Tank Co., Downingtown, Pa.
Doyle and Roth Mfg. Co., Inc., Brooklyn, N. Y.
Gardner-Denver Co., Quincy, Ill.
Graham Mfg. Co., Inc., New York, N. Y.
Griscom-Russell Co., The, Massillon, O.
Heat-X Inc., Subsidiary of Dunham-Bush, Inc., West Hartford, Conn.
Heatron, Inc., York, Pa.
Ingersoll-Rand Co., New York, N. Y.
Johnson Corp., The, Three Rivers, Mich.
Joy Mfg. Co., Pittsburgh, Pa.
Manning & Lewis Engineering Co., Newark, N. J.
Modine Mfg. Co., Racine, Wis.
Niagara Blower Co., New York, N. Y.
Parks-Cramer Co., Fitchburg, Mass.
Patterson-Kelley Co., Inc., The, East Stroudsburg, Pa.
Pennsylvania Pump & Compressor Co., Easton, Pa.
Rome-Turney Radiator Co., Rome, N. Y.
Schramm, Inc., West Chester, Pa.
Schutte and Koerting Co., Cornwells Heights, Bucks County, Pa.
Spray Engineering Co., Burlington, Mass.
Westinghouse Air Brake Co., Industrial Products Div., Wilmerding, Pa.
Wilson Engineering Corp., Chicago, Ill.
Worthington Corp., East Orange, N. J.
Yates-American Machine Co., Heat Transfer Products Div., Beloit, Wis.
Young Radiator Co., Racine, Wis.
Yula Corp., Bronx, N. Y.

AIR AFTERCOOLERS

See Aftercoolers, Compressed Air

AIR TO AIR HEAT RECOVERY UNITS

See Units, Heat Recovery, Air to Air

AIR BREAK FITTINGS

See Fittings, Draining, Fixed Air Break

AIR CLEANERS

See Cleaners, Air, Electrical

AIR COMPRESSORS

See Compressors, Air

AIR CONDITIONERS

See Units, Air Conditioning

AIR CONDITIONING UNITS

See Units, Air Conditioning

AIR CURTAIN, DOORWAYS

See Doorways, Air Curtain, for Large Entrances

AIR DIFFUSERS

See Diffusers, Air; Grilles; Panels Perforated, for Air Diffusion; Registers

AIR ELIMINATORS

See Eliminators, Air

AIR FILTER CLEANING COMPOUNDS

See Compounds, Cleaning, Air Filter

AIR FILTER GAGES

See Gages, Air Filter

AIR FILTERS

See Filters, Air

AIR FRESHENING

See Compounds, Air Freshening; Adsorbers, Odor, for Duct Systems

AIR HANDLING UNITS

See Units, Exhauster, Centrifugal Fan

AIR INTAKES

See Grilles; Intakes, for Outdoor Air, Wall or Roof, Equipped with Filters; Louvers and Shutters

AIR OPERATING VALVES

See Valves, Air Operating

AIR PURIFICATION

See Adsorbers, Odor, for Duct Systems; Compounds, Air Freshening; Lamps, Sterilizing, for Duct Installation

AIR RECOVERY EQUIPMENT

See Adsorbers, Odor, for Duct Systems

AIR SEPARATORS

See Separators, Air

AIR-TANKLESS WATER HEATERS

See Heaters, Water, Air-Tankless

AIR VALVES

See Valves, Radiators, Air

AIR VELOCITY METERS

See Meters, Air Velocity, Direct Reading; Anemometers

AIR VENTS

See Eliminators, Air

AIR VOLUME METERS

See Meters, Volume, Air and Gas

AIR WASHERS

See Washers, Air

ALARMS, COMBUSTIBLE GAS

Bailey Meter Co., Cleveland, O.
Benjamin Electric Mfg. Co., Des Plaines, Ill. (audible)
Bristol Co., The, Waterbury, Conn.
Davis Instruments, Div. of Davis Emergency Equipment Co., Inc., Newark, N. J.
Electro Devices, Inc., Mt. Prospect, Ill.
Hogart Engineering Co., Los Angeles, Calif.
Johnson-Williams Inc., Palo Alto, Calif.
Mine Safety Appliances Co., Pittsburgh, Pa.
Taller & Cooper, Inc., Brooklyn, N. Y.

ALARMS, HIGH AND LOW BOILER WATER

American District Telegraph Co., New York, N. Y.
Bailey Co., Chas. M., San Francisco, Calif.
Bailey Meter Co., Cleveland, O.
Benjamin Electric Mfg. Co., Des Plaines, Ill. (audible)
Defender Instrument & Regulator Co., Boody, Ill.
Diamond Power Specialty Corp., Lancaster, O.
Econo Products Company, Inc., Div. of Viking Instruments, Inc., East Haddam, Conn.
Engelhard, Inc., Charles, East Newark, N. J.
Ernst Water Column & Gauge Co., Livingston, N. J.
Fischer & Porter Co., Hatboro, Pa.
General Controls Co., Glendale, Calif.
Instruments, Inc., Tulsa, Okla.
Johnson Corp., The, Three Rivers, Mich.
Kisco Boiler & Engineering Co., St. Louis, Mo.
Magnetrol, Inc., Chicago, Ill.
McDonnell & Miller, Inc., Chicago, Ill.
Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.
Photobell Co., Inc., New York, N. Y.
Preferred Utilities Mfg. Corp., New York, N. Y.
Reliance Gauge Column Co., Cleveland, O.
Schaub Engineering Co., Fred H., Chicago, Ill.
Texas Instruments, Inc., Houston, Tex.
Watts Regulator Co., Lawrence, Mass.
Way-Wolff Associates, Inc., Long Island City, N. Y.
Yarnall-Waring Co., Philadelphia, Pa.

ALARMS, HIGH AND LOW FLOW, FOR PIPING SYSTEMS

Benjamin Electric Mfg. Co., Des Plaines, Ill. (audible)
Brooks Rotameter Co., Lansdale, Pa.
Eclipse Fuel Engineering Co., Rockford, Ill.
Fischer & Porter Co., Hatboro, Pa.
Henzey Co., Watertown, Wis.
Instruments, Inc., Tulsa, Okla.
Magnetrol, Inc., Chicago, Ill.
McDonnell & Miller, Inc., Chicago, Ill.
Minneapolis-Honeywell Regulator Co., Industrial Div., Philadelphia, Pa.
Rockwood Sprinkler Co., Worcester, Mass.

ALARMS, LIQUID LEVEL, AUDIBLE

American District Telegraph Co., New York, N. Y.
Automatic Control Co., St. Paul, Minn.
Benjamin Electric Mfg. Co., Des Plaines, Ill.
Bristol Co., The, Waterbury, Conn.
Defender Instrument & Regulator Co., Boody, Ill.
Electro Devices, Inc., Mt. Prospect, Ill.
Ess Instrument Co., Bergenfield, N. J.
Fischer & Porter Co., Hatboro, Pa.
Healy Ruff Co., St. Paul, Minn.
Instrument Div., Robertshaw-Fulton Controls Co., Philadelphia, Pa.
Kenco Pump Div., American Crucible Products Co., Lorain, O.
Magnetrol, Inc., Chicago, Ill.
Meriam Instrument Co., The, Cleveland, O.
McDonnell & Miller, Inc., Chicago, Ill.
Milton Roy Co., Philadelphia, Pa.
Minneapolis-Honeywell Regulator Co., Industrial Div., Philadelphia, Pa.
Oil Equipment Mfg. Corp., New Haven, Conn.
Petrometer Corp., Long Island City, N. Y.
Reliance Gauge Column Co., Cleveland, O.
Ripley Co., Inc., Middletown, Conn.
Rochester Mfg. Co., Inc., Rochester, N. Y.
Scully Signal Co., Melrose, Mass.
Uehling Instrument Co., Paterson, N. J.
Way-Wolff Associates, Inc., Long Island City, N. Y.

ALARMS, LIQUID LEVEL, VISUAL

Applied Mechanics Co., Boston, Mass.
Automatic Control Co., St. Paul, Minn.
Bristol Co., The, Waterbury, Conn.
Econo Products Company, Inc., Div. of Viking Instruments, Inc., East Haddam, Conn.
Electro Devices, Inc., Mt. Prospect, Ill.
Engelhard Inc., Charles, East Newark, N. J.
Fischer & Porter Co., Hatboro, Pa.
Instrument Div., Robertshaw-Fulton Controls Co., Philadelphia, Pa.
Instruments, Inc., Tulsa, Okla.
Kenco Pumps Div., American Crucible Products Co., Lorain, O.
Magnetrol, Inc., Chicago, Ill.
Meriam Instrument Co., The, Cleveland, O.
Minneapolis-Honeywell Regulator Co., Industrial Div., Philadelphia, Pa.
Petrometer Corp., Long Island City, N. Y.

Reliance Gauge Column Co., Cleveland, O.
Texas Instruments, Inc., Houston, Tex.
Uehling Instrument Co., Paterson, N. J.
Way-Wolff Associates, Inc., Long Island City, N. Y.

ALARMS, SMOKE

American District Telegraph Co., New York, N. Y.
Bailey Meter Co., Cleveland, O.
Benjamin Electric Mfg. Co., Des Plaines, Ill. (audible)
Bristol Co., The, Waterbury, Conn.
Brooke Engineering Co., Inc., Philadelphia, Pa.
Canton Stoker Corp., Canton, O.
Cardox Corp., Chicago, Ill.
Cleveland Controls, Inc., Cleveland, Ohio
CO Two Systems, Fyr-Fyter Co., Newark, N. J.
Defender Instrument & Regulator Co., Boody Ill.
De-Tec-Tronic Corp., Chicago, Ill.
Edwards, L. V., Rockville Center, N. Y.
Electronics Corp. of America, Cambridge, Mass.
Ess Instrument Co., Bergenfield, N. J.
Heat-Timer Corp., New York, N. Y.
McNeill Smoke Eliminator Co., Chicago, Ill
Photobell Co., Inc., New York, N. Y.
Reliance Instruments Mfg. Corp., Glen Cove, Long Island, N. Y.
Ripley Co., Inc., Middletown, Conn.
Standard Instrument Div., Heat-Timer Corp., New York, N. Y.
Sterns-Flinn Corp., New York, N. Y.
Way-Wolff Associates, Inc., Long Island City, N. Y.
Worner Electronic Devices, Rankin, Ill.

ALARMS, TEMPERATURE

American District Telegraph Co., New York
Barber-Colman Co., Rockford, Ill.
Benjamin Electric Mfg. Co., Des Plaines, Ill. (audible)
Bristol Co., The, Waterbury, Conn.
Burling Instrument Co., Air Conditioning Div., Chatham, N. J.
Cutler-Hammer, Inc., Milwaukee, Wis.
Defender Instrument & Regulator Co., Boody, Ill.
Devco Engineering Inc., Control Systems Div., Caldwell, N. J.
Econo Products Company, Inc., Div. of Viking Instruments, Inc., East Haddam, Conn.
Edison Industries, Thomas A., Instrument Div., McGraw-Edison Co., West Orange, N. J.
Electro Devices, Inc., Mt. Prospect, Ill.
Fischer & Porter Co., Hatsboro, Pa.
Fulton Sylphon Div., Robertshaw-Fulton Controls Co., Knoxville, Tenn.
General Controls Co., Glendale, Calif.
Illinois Testing Laboratories, Inc., Chicago, Ill.
Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.
Minneapolis-Honeywell Regulator Co., Industrial Div., Philadelphia, Pa.
Moeller Instrument Co., Richmond Hill, N. Y
Precision Thermometer & Instrument Co., Philadelphia, Pa.
Thermo Electric Co., Inc., Saddle Brook, N.J
United Electric Controls Co., Watertown, Mass.

ALGAE AND SLIME CONTROL, WATER TREATMENT FOR

See Treatment, Water, for Slime and Algae Control

ALUMINUM COATED SHEETS

See Sheets, Aluminum Coated

ALUMINUM PIPE

See Pipe, Aluminum

ALUMINUM SHEETS

See Sheets, Aluminum

AMMETERS

Columbia Electric Mfg. Co., Cleveland, O.
Pyramid Instrument Corp., Lynbrook, Long Island, N. Y.

Sangamo Electric Co., Springfield, Ill.
Westinghouse Electric Corp., Pittsburgh, Pa.
Weston Instruments, Div. of Daystrom, Inc., Newark, N. J.

ANALYZERS, CARBON DIOXIDE, PORTABLE

Airserco Mfg. Co., Inc., Pittsburgh, Pa. (electrical)
Bacharach Industrial Instrument Co., Pittsburgh, Pa.
Barclay, Inc., Robert, Chicago, Ill.
Cardox Corp., Chicago, Ill.
Defender Instrument & Regulator Co., Boody, Ill.
Dwyer Mfg. Co., F. W., Michigan City, Ind.
Ellison Draft Gage Co., Chicago, Ill.
Engelhard, Inc., Chas., East Newark, N. J.
Hays Corp., Michigan City, Ind.
Permutit Co., Div. of Pfaudler Permutit, Inc., New York, N. Y.
Standard Instrument Div., Heat-Timer Corp., New York, N. Y.
Uehling Instrument Co., Paterson, N. J.
Victory Engineering Corp., Union, N. J.
Will Corp., Rochester, N. Y.

ANCHORS, EXPANSION

Arro Expansion Bolt Co., Marion, O.
Chicago Expansion Bolt Co., Chicago, Ill.
Diamond Expansion Bolt Co., Inc., Garwood, N. J.
Modern Hanger Corp., Cleveland, O.
National Lead Co., New York, N. Y.
Paine Co., Addison, Ill.
Rawlplug Co., Inc., The, New Rochelle, N. Y.
U. S. Expansion Bolt Co., York, Pa

ANCHORS FOR INSULATION

See Fasteners, Insulation

ANEMOMETERS

Bacharach Industrial Instrument Co., Pittsburgh, Pa.
Barclay, Inc., Robert, Chicago, Ill.
Beckman & Whitley, Inc., San Carlos, Calif.
Dietzgen Co., Eugene, Chicago, Ill.
Dwyer Mfg. Co., F. W., Michigan City, Ind.
Flow Corp., Arlington, Mass. (Hot wire)
Friez Instrument Div., Bendix Aviation Corp., Baltimore, Md.
G. M. Mfg. Co., New York, N. Y.
General Scientific Equipment Co., Philadelphia, Pa.
Hastings-Raydist, Inc., Hampton, Va.
Hill & Co., E. Vernon, Lake Geneva, Wis.
Illinois Testing Laboratories, Inc., Chicago, Ill.
Mine Safety Appliances Co., Pittsburgh, Pa.
Taylor Instrument Companies, Rochester, N. Y.
Willson Products Co., Reading, Pa.

ANGLE VALVES

See Valves, Angle

ANGLES, BARS, BEAMS, CHANNELS AND TEES (LIGHT WEIGHT SHAPES)

Acme Steel Co., Chicago, Ill. (slotted angle)
Allegheny Ludlum Steel Corp., Pittsburgh, Pa. (Stainless)
Aluminum Co. of America, Pittsburgh, Pa.
American Brass Co., Waterbury, Conn.
Atlantic Steel Co., Atlanta, Ga.
Bethlehem Steel Co., Bethlehem, Pa.
Bridgeport Brass Co., Bridgeport, Conn. (aluminum)
Byers Co., A. M., Pittsburgh, Pa.
Central Steel & Wire Co., Chicago, Ill.
Chase Brass & Copper Co., Waterbury, Conn.
Columbia-Geneva Steel Div., United States Steel Corp., San Francisco, Calif.
Dow Chemical Co., The, Midland, Mich.
Harvey Aluminum, Torrance, Calif.
Inland Steel Co., Chicago, Ill.
Inland Steel Products Co., Milwaukee, Wis.
Jones & Laughlin Steel Corp., Pittsburgh, Pa.
Kling Bros. Engineering Wks., Chicago, Ill.
Laclede Steel Co., St. Louis, Mo.
Lees Div., John, The Serrick Corp., Muncie, Ind.
Mesker Steel Corp., Geo. L., Evansville, Ind.
Redi-Bolt, Inc., East Chicago, Ind.
Republic Steel Corp., Cleveland, O.

Revere Copper and Brass, Inc., New York, N. Y.
Reynolds Metals Co., Richmond, Va.
Tennessee Coal & Iron Div., United States Steel Corp., Fairfield, Ala.
United States Steel Corp., Pittsburgh, Pa.
Weirton Steel Co., Weirton, W. Va.
Youngstown Sheet & Tube Co., Youngstown, O.

ANODES FOR CORROSION PROTECTION

See Devices, Electrolytic, for Preventing Corrosion

ANTI-FREEZE COMPOUNDS FOR SNOW MELTING

See Compounds, Anti-Freeze

AQUASTATS

See Thermostats

ARC WELDERS

See Welders, Arc

ARC WELDING ELECTRODES

See Electrodes, Arc Welding

ASBESTOS FIBER AND CEMENT PIPE

See Pipe, Asbestos Fiber and Cement

ASBESTOS MATERIALS

See Insulation

ASBESTOS PACKING

See Packing, Asbestos

ASH CONVEYORS

See Conveyors, Coal and Ash

ASSEMBLIES, MANIFOLD, FOR METERS

Bristol Co., The, Waterbury, Conn.
Foxboro Co., Foxboro, Mass.
Penn Instruments Div. of Burgess-Manning Co., Philadelphia, Pa.

ATOMIZING NOZZLES

See Nozzles, Atomizing

ATTENUATOR BOXES, SOUND

See Units, Mixing, Sound and Volume Control, for Double Duct High Velocity Air Conditioning Systems

AXIAL FLOW FANS

See Fans, Axial Flow, Pressure Type

BACK-DRAFT DAMPERS

See Dampers, Air, Back-draft

BACKING RINGS

See Rings, Backing, for Pipe Welding

BAGS, DUST, FOR DUST COLLECTORS

Day Co., The, Minneapolis, Minn.
Modern Dust Bag Co., Inc., West Haverstraw, N. Y.

BALANCE CLIPS

See Clips, Balance, Blower Wheel

BALANCING ELBOWS AND TEES, FOR HOT WATER HEATING AND CHILLED WATER SYSTEMS

See Elbows and Tees, Balancing, for Hot Water Heating and Chilled Water Systems

BALANCING EQUIPMENT

See Equipment, Balancing

BALANCING VALVES

See Valves, Balancing

BALL BEARINGS

See Bearings, Ball

BAROMETRIC CONTROLS

See Controls, Draft, Barometric

BARRIERS, VAPOR, FOR BUILDING INSULATION

Alumiseal Corp., New York, N. Y.
Barrett Div., Allied Chemical & Dye Corp., New York, N. Y.
Bemis Bro. Bag Co., St. Louis, Mo.
Carey Mfg. Co., Philip, Lockland, Cincinnati, O.
Corrosion Control Co., Inc., New York, N. Y.
Ellis & Watts Products, Inc., Cincinnati, O.
Foster Co., Benjamin, Philadelphia, Pa.
Infra Insulation, Inc., New York, N. Y.
Insul-Coustic Corp., Maspeth, N. Y.
Koppers Co., Inc., Pittsburgh, Pa. (polyethylene film)
Mundet Cork Corp., North Bergen, N. J.
Pacific Lumber Co., The, San Francisco, Calif.
Revere Copper & Brass, Inc., Foil Div., Brooklyn, N. Y.
Richkraft Co., Chicago, Ill.

BARRIERS, VAPOR, FOR DUCT INSULATION

Alumiseal Corp., New York, N. Y.
Armstrong Cork Co., Lancaster, Pa. (plastic asphalt emulsion)
Carey Mfg. Co., Philip, Lockland, Cincinnati, O.
Corrosion Control Co., Inc., New York, N. Y.
Owens-Corning Fiberglas Corp., Toledo, O.
Foster Co., Benjamin, Philadelphia, Pa.
Infra Insulation, Inc., New York, N. Y.
Richkraft Co., Chicago, Ill.

BARRIERS, VAPOR, FOR PIPE INSULATION

Alumiseal Corp., New York, N. Y.
Armstrong Cork Co., Lancaster, Pa. (plastic asphalt emulsion)
Carey Mfg. Co., Philip, Lockland, Cincinnati, O.
Corrosion Control Co., Inc., New York, N. Y.
Foster Co., Benjamin, Philadelphia, Pa.
Infra Insulation, Inc., New York, N. Y.
Johns-Manville, New York, N. Y.
MMM, Inc., Portsmouth, O.
Mundet Cork Corp., North Bergen, N. J.
Owens-Corning Fiberglas Corp., Toledo, O.
Revere Copper & Brass, Inc., Foil Div., Brooklyn, N. Y.

BASEBOARD RADIATION

See Radiation, Baseboard

BASES, MOTOR, TENSION ADJUSTING

Ackermann Mfg. Co., Wheeling, W. Va.
Allis-Chalmers Mfg. Co., Milwaukee, Wis.
American Pulley Co., Philadelphia, Pa.
Automatic Motor Base Co., Windsor, N. J.
Chicago Die Casting Mfg. Co., Chicago, Ill.
Clarage Fan Co., Kalamazoo, Mich.
Electrovent Fan & Mfg. Co., Chicago, Ill.
General Electric Co., Apparatus Sales Div., Schenectady, N. Y.
Korfund Co., Inc., Long Island City, N. Y.
Lovejoy Flexible Coupling Co., Chicago, Ill.
Reeves Pulley Co., Div. of Reliance Electric & Engineering Co., Columbus, Ind.
Rhoads & Sons, J. E., Wilmington, Del.
Valley Foundry & Machine Works, Inc., Fresno, Calif.

BASES, VIBRATION ISOLATING, PAD TYPE

Air-Loc Div., Clark, Cutler, McDermott Co., Franklin, Mass.
American Felt Co., Glenville, Conn.
Barry Controls, Inc., Watertown, Mass.
Celotex Corp., The, Chicago, Ill.
Fabreeka Products Co., Inc., Boston, Mass.
Felters Co., The, Boston, Mass. (adjustable)
Finn & Co., Inc., T. R., Hawthorne, N. J.
Flexlock Corp., Kent, O.
Goodrich Co., B. F., Shelton, Conn.
Goodrich Industrial Products Co., B. F., Akron, O.
Goodyear Tire & Rubber Co., Akron, O.
Keldur Div. of Quimby & Co., Chester, N. J.
Korfund Co., Inc., Long Island City, N. Y.
L. O. F. Glass Fibers Co., Toledo, O.
M B Mfg. Co., New Haven, Conn.
National Cork Co., Englewood, N. J.
Pacific States Felt & Mfg. Co., Inc., San Francisco, Calif.
Raybestos-Manhattan, Inc., Passaic, N. J.
Sausse & Co., M. W., Los Angeles, Calif. (cork; rubber-in-shear)
Spring Packing Corp., Chicago, Ill.
United Cork Companies, Kearney, N. J.
United States Rubber Co., New York, N. Y.
Vibration Eliminator Co., Long Island City, N. Y.
Vibration Mountings, Inc., Corona, N. Y.
Western Felt Works, Chicago, Ill.
Wood Conversion Co., St. Paul, Minn.

BASES, VIBRATION ISOLATING, SPRING TYPE

Barry Controls, Inc., Watertown, Mass.
Finn & Co., Inc., T. R., Hawthorne, N. J.
Korfund Co., Inc., Long Island City, N. Y.
Lord Mfg. Co., Erie, Pa.
Robinson Aviation, Inc., Teterboro, N. J.
Sausse & Co., M. W., Los Angeles, Calif.
Vibration Eliminator Co., Long Island City, N. Y.
Vibration Mountings, Inc., Corona, N. Y.

BEARINGS, BALL

Aetna Ball & Roller Bearing Co., Div. of Parkersburg-Aetna Corp., Chicago, Ill.
Bearings Co. of America, Div. of Federal-Mogul-Bower Bearings, Inc., Lancaster, Pa.
Dodge Mfg. Corp., Mishawaka, Ind.
Fafnir Bearing Co., The, New Britain, Conn
Hoover Ball & Bearing Co., Ann Arbor, Mich.
Link-Belt Co., Chicago, Ill.
Marlin-Rockwell Corp., Jamestown, N. Y.
New Departure Div., General Motors Corp., Bristol, Conn.
Nice Ball Bearing Co., Philadelphia, Pa.
Norma-Hoffman Bearings Corp., Stamford, Conn.
SKF Industries, Inc., Philadelphia, Pa.
Schatz Mfg. Co., The, Poughkeepsie, N. Y.
Sealmaster Bearings, Div. of Stephens-Adamson Mfg. Co., Aurora, Ill.
Torrington Co., The, Bantam Bearings Div., South Bend, Ind.
Wood's Sons Co., T. B., Chambersburg, Pa.

BEARINGS, NEEDLE

Andrew Parts Mfg. Co., Long Island City, N. Y.
Hyatt Bearings Div., General Motors Corp., Harrison, N. J.
Roller Bearing Co. of America, West Trenton, N. J.
Torrington Co., The, Bantam Bearings Div., South Bend, Ind.

BEARINGS, PILLOW BLOCK

Anti-Friction Bearings Co., Bell Gardens, Calif.
Bearings Co. of America, Div. of Federal-Mogul-Bower Bearings, Inc., Lancaster, Pa.
Boston Gear Works, Quincy, Mass.
Browning Mfg. Co., Maysville, Ky.
Chain Belt Co., Milwaukee, Wis.
Chicago Die Casting Mfg. Co., Chicago, Ill.
Clizbe Bros. Mfg. Co., Plymouth, Ind.
Colgate Co., Charles A., Pittsburgh, Pa.
Congress Drives Div., Tann Corp., Detroit, Mich.
Dodge Mfg. Corp., Mishawaka, Ind.
Fafnir Bearing Co., The, New Britain, Conn.
Goldens' Foundry & Machine Co., Columbus, Ga.
Hewitt-Robins Inc., Stamford, Conn.
Hoover Ball & Bearing Co., Ann Arbor, Mich.
Jeffrey Mfg. Co., Columbus, O.
Jones Machinery Div., Hewitt-Robins, Inc., Chicago, Ill.
Lau Blower Co., Dayton, O.
Link-Belt Co., Chicago, Ill.
Marlin-Rockwell Corp., Jamestown, N. Y.
Moraine Products Div., General Motors Corp., Dayton, O.
Randall Graphite Bearings, Inc., Lima, O.
Royersford Foundry & Machine Co., Inc., Royersford, Pa.
SKF Industries, Inc., Philadelphia, Pa.
Sealmaster Bearings, Div. of Stephens Adamson Mfg. Co., Aurora, Ill.
Shafer Bearing, Div. of Chain Belt Co., Downers Grove, Ill. (self-aligning)
Standard Pressed Steel Co., Jenkintown, Pa.
Triangle Mfg. Co., Oshkosh, Wis.
Wood's Sons Co., T. B., Chambersburg, Pa.

BEARINGS, ROLLER

Aetna Ball & Roller Bearing Co., Div. of Parkersburg-Aetna Corp., Chicago, Ill.
Andrew Parts Mfg. Co., Long Island City, N. Y.
Berna Co., A. J., Roseville, Mich.
Chain Belt Co., Milwaukee, Wis.
Dodge Mfg. Corp., Mishawaka, Ind.
Hyatt Bearings Div., General Motors Corp., Harrison, N. J.
Link-Belt Co., Chicago, Ill.
Marlin-Rockwell Corp., Jamestown, N. Y.
Norma-Hoffman Bearings Corp., Stamford, Conn.
Roller Bearing Co. of America, West Trenton, N. J.
Royersford Foundry & Machine Co, Inc., Royersford, Pa.
SKF Industries, Inc., Philadelphia, Pa.
Shafer Bearing, Div. of Chain Belt Co., Downers Grove, Ill. (self aligning)
Timken Roller Bearing Co., Canton, O.
Torrington Co., The, Bantam Bearings Div., South Bend, Ind.

BEARINGS, SLEEVE

Ampco Metal, Inc., Milwaukee, Wis.
Andrew Parts Mfg. Co., Long Island City, N. Y.
Bound Brook Oil-less Bearing Co., Bound Brook, N. J.
Bronze Bearings, Inc., Cranford, N. J.
Cleveland Graphite Bronze Co., Div. of Clevite Corp., Cleveland, O.
Climax Metal Products Co., Cleveland, O.
Congress Drives Div., Tann Corp., Detroit, Mich.
Dodge Mfg. Corp., Mishawaka, Ind.
Federal-Mogul Div., Federal-Mogul-Bower Bearings, Inc., Detroit, Mich.
Gatke Corp., Chicago, Ill.
Haveg Industries, Inc., Wilmington, Del. (plastic)
International Powder Metallurgy, Inc., Ridgway, Pa.
Johnson Bronze Co., New Castle, Pa.
Keystone Carbon Co., Inc., St. Marys, Pa.
Lau Blower Co., Dayton, O.
Link Belt Co., Chicago, Ill.
Moraine Products Div., General Motors Corp., Dayton, O.
Morganite, Inc., Carbon Specialties Div., Long Island City, N. Y.
Morrison Products, Inc., Cleveland, O.
Randall Graphite Bearings, Inc., Lima, O.
Utility Fan Corp., Div. of Utility Appliance Corp., Los Angeles, Calif.

BELLOWS, THERMOSTATIC AND METALLIC

American Boa, Inc., New York, N. Y.
Bishop & Babcock Mfg. Co., Cleveland, O.
Bridgeport Thermostat Div., Robertshaw-Fulton Controls Co., Milford, Conn.
Bristol Co., The, Waterbury, Conn.
Clifford Mfg. Co., Div. of Standard-Thomson Corp., Waltham, Mass.
Cook Electric Co., Chicago, Ill.
Flexonics Corp., Maywood, Ill.
Fulton Sylphon Div., Robertshaw-Fulton Controls Co., Knoxville, Tenn.
Solar Aircraft Co., San Diego, Calif.
U. S. Flexible Metallic Tubing Co., Los Angeles, Calif.
Zallea Bros., Wilmington, Del.

BELTING, FLAT, LEATHER

Allen Mfg. Co., W. D., Bellwood, Ill.
Chicago Belting Div., Chicago-Allis Mfg. Corp., Chicago, Ill.
Extremultus, Inc., New York, N. Y.
Graton & Knight Co., Worcester, Mass.
Houghton & Co., E. F., Philadelphia, Pa.
Rhoads & Sons, J. E., Wilmington, Del.
Schieren Co., Chas. A., Camden, N. J.
Sikes Co., S. R., Minneapolis, Minn.
Sudbury Laboratory, South Sudbury, Mass.
Williams & Son, I. B., Dover, N. H.

BELTING, FLAT, PLASTIC

Extremultus, Inc., New York, N. Y.
Rhoads & Sons, J. E., Wilmington, Del.
Southern Plastics Co., Columbia, S. C.

BELTING, FLAT, RUBBER

Armstrong Cork Co., Lancaster, Pa.
Boston Woven Hose & Rubber Co., Div. of American Biltrite Rubber Co., Cambridge, Mass.
Goodall Rubber Co., Trenton, N. J.
Goodrich Industrial Products Co., B. F., Akron, O.
Goodyear Tire & Rubber Co., Akron, O.
Hamilton Rubber Mfg. Corp., Trenton, N. J.
Hewitt-Robins, Inc., Stamford, Conn.
Mercer Rubber Co., Hamilton Sq., N. J.
New York Belting & Packing Co., Passiac, N. J.
Pacific States Felt & Mfg. Co., Inc., San Francisco, Calif.
Porter Co., Inc., H. K., Quaker Rubber Div., Philadelphia, Pa.
Raybestos-Manhattan, Inc., Passaic, N. J.
Republic Rubber Div., Lee Rubber & Tire Corp., Youngstown, O.
Thermoid Co., Trenton, N. J.
United States Rubber Co., New York, N. Y.

BELTS, TOOTH-GRIP OR COG

Dayton Rubber Co., Dayton, O.
Lovejoy Flexible Coupling Co., Chicago, Ill.
Morse Chain Co., Ithaca, N. Y.
New York Belting & Packing Co., Passaic, N. J.
United States Rubber Co., New York, N. Y. (rubber)
Wood's Sons Co., T. B., Chambersburg, Pa.

BELTS, V

Allis-Chalmers Mfg. Co., Milwaukee, Wis.
America Pulley Co., Philadelphia, Pa.
Boston Woven Hose & Rubber Co., Div. of American Biltrite Rubber Co., Cambridge, Mass.
Browning Mfg. Co., Maysville, Ky.
Climax Metal Products Co., Cleveland, O.
Congress Drives Div., Tann Corp., Detroit, Mich.
Dayton Rubber Co., Dayton, O.
Dodge Mfg. Corp., Mishawaka, Ind.
Durkee-Atwood Co., Minneapolis, Minn.
Ft. Worth Steel & Machinery Co., Ft. Worth, Tex.
Gates Rubber Co., Denver, Colo.
Goodall Rubber Co., Trenton, N. J.
Goodrich Industrial Products Co., B. F., Akron, O.
Goodyear Tire & Rubber Co., Akron, O.
Jones Machinery Div., Hewitt-Robins, Inc., Chicago, Ill.
Lovejoy Flexible Coupling Co., Chicago, Ill.
Manheim Mfg. & Belting Co., Manheim, Pa.
Maurey Mfg. Corp., Chicago, Ill.
New York Belting & Packing Co., Passaic, N. J.
Pacific States Felt & Mfg. Co., Inc., San Francisco, Calif.
Pyott Foundry & Machine Co., Aurora, Ill.
Porter Co., Inc., H. K., Quaker Rubber Div., Philadelphia, Pa.
Raybestos-Manhattan, Inc., Passaic, N. J.
Republic Rubber Div., Lee Rubber & Tire Corp., Youngstown, O.
Schieren Co., Chas. A., Camden, N. J.
Sikes Co., S. R., Minneapolis, Minn. (leather)
Thermoid Co., Trenton, N. J.
United States Rubber Co., New York, N. Y.
Wood's Sons Co., T. B., Chambersburg, Pa.
Worthington Corp., East Orange, N. J.
Zatko Metal Products Co., Euclid, O.

BENDERS, PIPE

American Pipe Bending Machine Co., Inc., Poultney, Vt.
American Pipe Tool Co., Chicago, Ill.
Blackhawk Mfg. Co., Milwaukee, Wis.
Buffalo Forge Co., Buffalo, N. Y.
Burr Oak Tool & Gauge Co., Sturgis, Mich.
Excelsior Tool & Machine Co., East St. Louis, Ill.
Greenlee Tool Co., Div. of Greenlee Bros. & Co., Rockford, Ill.
Hein-Werner Corp., Waukesha, Wis.
Hill, Inc., Walter P., Detroit, Mich.
Holsclaw Bros., Inc., Evansville, Ind.
Hossfeld Mfg. Co., Winona, Minn.
Imperial Brass Mfg. Co., Chicago, Ill.
Lenz Co., Dayton, O.
Lidseen of North Carolina, Inc., Hayesville, N. C.
Milton Equipment Co., Philadelphia, Pa.
National Pipe Bending Co., New Haven, Conn.
Nuclear & Power Equipment Corp., S. San Francisco, Calif.
O'Neil-Irwin Mfg. Co., Lake City, Minn.
Pedrick Tool & Machine Co., Philadelphia, Pa.
Pines Engineering Co., Inc., Aurora, Ill.
Radiant Devices, St. Louis, Mo.
Sac Tool Mfg. Co., St. Louis, Mo.
Senna Mfg. Co., Spokane, Wash.
Skinner Co., M. B., South Bend, Ind.
Vanderman Mfg. Co., Willimantic, Conn.
Wallace Supplies Mfg. Co., Chicago, Ill.
Wilson Co., K. R., Arcade, N. Y.

BENDERS, TUBING

Blackhawk Mfg. Co., Milwaukee, Wis.
Bonney Forge & Tool Wks., Allentown, Pa
Buffalo Forge Co., Buffalo, N. Y.
Burr Oak Tool & Gauge Co., Sturgis, Mich.
Chase Brass & Copper Co., Waterbury, Conn.
Chicago Specialty Mfg. Co., Chicago, Ill.
Duro Metal Products Co., Chicago, Ill.
Erie Tool Works, Erie, Pa.
Excelsior Tool & Machine Co., East St. Louis, Ill.
Greenlee Tool Co., Div. of Greenlee Bros & Co., Rockford, Ill.
Griffith Equipment Co., Inc., Los Angeles Calif
Hein-Werner Corp., Waukesha, Wis.
Hill, Inc., Walter P., Detroit, Mich.
Holsclaw Bros., Inc., Evansville, Ind.
Hossfeld Mfg. Co., Winona, Minn.
Imperial Brass Mfg. Co., Chicago, Ill.
Lenz Co., Dayton, O.
Leonard Precision Products Co., Santa Ana, Calif.
Madden Brass Products Co., Aurora, Ill.
Milton Equipment Co., Philadelphia, Pa.
National Pipe Bending Co., New Haven Conn.
Nuclear & Power Equipment Corp., S. San Francisco, Calif.
O'Neil-Irwin Mfg. Co., Lake City, Minn.
Parker-Hannifin Corp., Tube & Hose Fittings Div., Cleveland, O.
Pedrick Tool & Machine Co., Philadelphia Pa.
Pines Engineering Co., Inc., Aurora, Ill.
Republic Steel Corp., Cleveland, O.
Sac Tool Mfg. Co., St. Louis, Mo.
Senna Mfg. Co., Spokane, Wash.
Steel City Electric Co., Pittsburgh, Pa.
Wallace Supplies Mfg. Co., Chicago, Ill.
Wilson Co., K. R., Arcade, N. Y.
Wilson Manufacturing Co., Memphis, Tenn

BENDS, EXPANSION, STEAM PIPE

Atlantic Pipe Bending & Fabricating Corp., Moonachie, N. J.
Blaw Knox Co., Power Piping and Sprinkler Div., Pittsburgh, Pa.
Cobra Pipe Supply & Coil Co., Inc., Elmwood, Conn.
Clow & Sons, Inc., James B., Chicago, Ill.
Crane Co., Chicago, Ill
Dravo Corp., Machinery Div., Pittsburgh, Pa
Durant Insulated Pipe Co., E. Palo Alto, Calif.
Flori Pipe Co., The, St Louis, Mo.
Grinnell Co., Inc., Providence, R. I.
Kellogg Co., M. W., The, New York, N. Y
Marquette Coppersmithing Co., Philadelphia Pa.
Midwest Piping Co., Inc., St. Louis, Mo.
Mitchell & Co., Inc., W. K., Philadelphia, Pa
National Pipe Bending Co., New Haven Conn.
National Valve & Mfg. Co., Pittsburgh, Pa
Ohio Pipe Bending & Machine Co., Cleveland O.
Pittsburgh Pipe Coil & Bending Co., Etna, Pittsburgh, Pa.
Pittsburgh Piping & Equipment Co., Pittsburgh, Pa.
Rempe Co., Chicago, Ill.
Ric-wiL, Inc., Barberton, O.
Roessing Mfg. Co., Pittsburgh, Pa.
Sales & Co., Murray W., Detroit, Mich.
Shaw Co., Benjamin F., Wilmington, Del.
Shaw-Kendall Engineering Co., Toledo, O.
Taylor Engineering Corp., Detroit, Mich.
Walworth Co., New York, N. Y.
Western Piping & Engineering Co., Inc., San Francisco, Calif.
Whitlock Mfg. Co., W. Hartford, Conn.

BENDS, PIPE, RETURN

Atlantic Pipe Bending & Fabricating Corp., Moonachie, N. J.
Cobra Pipe Supply & Coil Co., Inc., Elmwood, Conn.
Crane Co., Chicago, Ill.
Gerry Tool Co., Bristol, Conn.
Grinnell Co., Inc., Providence, R. I.
Lewis & Saunders, Lakeport, N. H.
National Pipe Bending Co., New Haven, Conn.
Pittsburgh Nipple Works, Pittsburgh, Pa.
Rittling Corp., The, Buffalo, N. Y.
Roessing Mfg. Co., Pittsburgh, Pa.
Sales & Co., Murray W., Detroit, Mich.
Speedline Stainless Steel Fittings Div., Horace T. Potts Co., Philadelphia, Pa.
Star Tubular Products Co., Chicago, Ill.
Vilter Mfg. Co., The, Milwaukee, Wis.
Western Piping & Engineering Co., Inc., San Francisco, Calif.

BI-METALS, THERMOSTATIC

American Silver Co., Flushing, N. Y.
Chace Co., W. M., Detroit, Mich.
Engelhard Industries, Inc., Newark, N. J.
General Plate Div., Metals & Controls Corp., Attleboro, Mass.
Wilson Div., H. A., Engelhard Industries, Union, N. J.

BLADES, PROPELLER FAN

Ackermann Mfg. Co., Wheeling, W. Va.
Aerovent Fan Co., Inc., Piqua, O.
Aire-Foile Fan & Blower Co., Detroit, Mich.
Airmaster Corp., Chicago, Ill.
Alloy Propeller, Zelionople, Pa.
Bertram Co., Harvey P., The, Cincinnati, O.
Broan Mfg. Co., Inc., Hartford, Wis.
Bronson Fan Mfg. Corp., Los Angeles, Calif.
Brookside Corp., McCordsville, Ind.
Burden Co., Alan E., Los Angeles, Calif.
C & H Air Conditioning Fan Co., Inc., Atlanta, Ga.
Champion Blower & Forge Co., Lancaster, Pa.
Chicago Blower Corp., Franklin Park, Ill.
Dayton Rubber Co., Dayton, O.
Electrovent Fan & Mfg. Co., Chicago, Ill.
Frigid, Inc., Brooklyn, N. Y.
Hudson Engineering Corp., Houston, Tex. (plastic)
Industrial Plastic Fabricators, Norwood, Mass. (PVC)
International Engrg. Inc., Dayton, O.
Kody Blower Co., Trenton, N. J.
Koppers Co., Inc., Aeromaster Fan Dept., Baltimore, Md.
Koppers Company, Inc., Metal Products Div., Baltimore, Md.
Lakewood Engineering & Mfg. Co., Chicago.
Martin Fan & Blower Co., Chicago, Ill.
Meier Electric & Machine Co., Inc., Indianapolis, Ind.
Peerless Electric Co., Warren, O.
Precision Fan Blade Mfg. Co., Div. of Warrington Co., Los Angeles, Calif.
Robinson Ventilating Co., Zelienople, Pa.
Schwitzer Corp., Indianapolis, Ind.
South Bend Air Products, Inc., South Bend, Ind.
Torrington Mfg. Co., Torrington, Conn.
Whirlwind Mfg. Co., Houston, Tex.
Wind-Way Fan & Ventilator Co., New Orleans, La.

BLAST GATES

See Gates, Blast

BLAST HEATERS

See Surface, Finned, Heating

BLAST HEATING COILS

See Surface, Finned, Heating

BLINDS, LINE, PIPE

Greenwood Valve Div. of Vernon Tool Co., Ltd., Alhambra, Calif.
Hamer Valves, Inc., Long Beach, Calif.
Ladish Co., Cudahy, Wis.

Plant Engineering & Equipment Co., Elizabeth, N. J.
Smith-Blair, Inc., South San Francisco, Calif.
Vernon Tool Co., Ltd., Alhambra, Calit.

BLOCKS, TERMINAL, FOR ELECTRICAL CONNECTIONS

Allen-Bradley Co., Milwaukee, Wis.
Cutler-Hammer, Inc., Milwaukee, Wis.
General Electric Co., Apparatus Sales Div., Schenectady, N. Y.
Kulka Electric Corp., Mt. Vernon, N. Y.
Marathon Electric Mfg. Corp., Wausau, Wis.
Pyle-National Co., The, Chicago, Ill.
Sealed Unit Parts Co., Inc., New York, N. Y.
Westinghouse Electric Corp., Pittsburgh, Pa.

BLOW PIPE FITTINGS

See Fittings, Blow Pipe

BLOWER FANS

See Fans, Axial Flow; and Fans, Centrifugal

BLOWER HOUSINGS

See Housings, Fan

BLOWER WHEELS

See Wheels, Blower

BLOWERS, HIGH PRESSURE

For Low Pressure Blower Fans, See Fans, Centrifugal

Airfan Engineering Co., Los Angeles, Calif.
Allis-Chalmers Mfg. Co., Milwaukee, Wis.
American Blower Div. of American-Standard, Detroit, Mich.
Barry Blower Co., Minneapolis, Minn.
Bayley Blower Co., Milwaukee, Wis.
Beach-Russ Co., New York, N. Y.
Brookside Corp., McCordsville, Ind.
Buffalo Forge Co., Buffalo, N. Y.
Century Fan & Ventilator Co., Inc., Stamford, Conn.
Champion Blower & Forge Co., Lancaster, Pa.
Chelsea Fan & Blower Co., Inc., Subsidiary of Chelsea Products, Inc., Plainfield, N. J.
Chicago Blower Corp., Franklin Park, Ill.
Clarage Fan Co., Kalamazoo, Mich.
Day Co., The, Minneapolis, Minn.
Dayton Electric Mfg. Co., Chicago, Ill.
De Laval Steam Turbine Co., Trenton, N. J.
Dynamic Air Engineering, Inc., Los Angeles, Calif.
Eclipse Fuel Engineering Co., Rockford, Ill.
Elliott Co., Jeannette, Pa.
Fluor Products Co., Whittier, Calif.
General Blower Co., Morton Grove, Ill.
Hauck Mfg. Co., Brooklyn, N. Y.
Ilg Electric Ventilating Co., Chicago, Ill.
Industrial Plastic Fabricators, Norwood, Mass. (plastic construction for exhaust and corrosive fumes)
Ingersoll-Rand Co., New York, N. Y.
Jan-Air, Inc., Richmond, Ill.
Joy Mfg. Co., Pittsburgh, Pa.
Kice Metal Products Co., Wichita, Kans.
Lammert & Mann Co., Chicago, Ill.
Martin Fan & Blower Co., Chicago, Ill.
Master Fan Corp., Los Angeles, Calif.
North American Mfg. Co., Cleveland, O.
Peerless Electric Co., Warren, O.
Power Engineering Corp., Weirton, W. Va.
Power Line Fan Co., Inc., Subsidiary of Chelsea Products, Inc., Plainfield, N. J.
Research Vacuum Supply Co., Chicago, Ill.
Roots-Connersville Blower, Div. of Dresser Industries, Inc., Connersville, Ind.
Spencer Turbine Co., Hartford, Conn.
Standard Electric Mfg. Co., West Berlin, N. J.
Sutorbilt Corp., Subsidiary of Fuller Co., Compton, Calif.
Torrington Mfg. Co., The, Torrington, Conn.
Trane Co., The, La Crosse, Wis.
Turbo Research Corp., Santa Monica, Calif.
United States Air Conditioning Corp., Delaware, O.
Utility Appliance Corp., Los Angeles, Calif.
Western Blower Co., Seattle, Wash.
Westinghouse Electric Corp., Sturtevant Div., Boston, Mass.
Wing Mfg. Co., L. J., Div. of Aero Supply Mfg. Co., Inc., Linden, N. J.

BLOWERS, SOOT

Airfan Engineering Co., Los Angeles, Calif.
Bate Soot Blower Div., General Blower Co., Inc., Philadelphia, Pa.
Bayer Co., St. Louis, Mo.
Boiler Equipment Trust, Amherst, Mass.
Chesterton Co., A. W., Everett, Mass.
Copes-Vulcan Div., Blaw-Knox Co., Erie, Pa.
Diamond Power Specialty Corp., Lancaster, O.
Marion Machine Foundry Inc., Marion, Ind.

BLOW-OFF VALVES

See Valves, Blow-off

BLUE PRINT MACHINES

See Machines, Blue Print and White Print

BOARDS, PANEL AND CONTROL

Ace Engineering Co., Chicago, Ill.
Adam Electric Co., Frank, St. Louis, Mo.
Airserco Mfg. Co., Inc., Pittsburgh, Pa.
Auto-Control Laboratories, Inc., Inglewood, Calif.
Automatic Switch Co., Florham Park, N. J.
Barber-Colman Co., Rockford, Ill.
Bailey Meter Co., Cleveland, O.
Better Engineered Controls, Los Angeles, Calif.
Bristol Co., The, Waterbury, Conn.
Continental Electric Equipment Co., Cincinnati, O.
Cutler-Hammer, Inc., Milwaukee, Wis.
Devco Engineering, Inc., Control Systems Div., Caldwell, N. J.
Econo Products Co., Inc., Div. of Viking Instruments, Inc., East Haddam, Conn.
Falstrom Co., Passaic, N. J.
Fischer & Porter Co., Hatboro, Pa.
Foxboro Co., Foxboro, Mass.
General Controls Co., Glendale, Calif.
General Electric Co., Apparatus Sales Div., Schenectady, N. Y.
Hays Corp., Michigan City, Ind.
International Business Machines Corp., New York, N. Y.
Iron Fireman Mfg. Co., Cleveland, O.
Johns-Manville, New York, N. Y. (asbestos ebony)
Littleford Bros., Inc., Cincinnati, O.
Marsh Instrument Co., Skokie, Ill.
Mettler Co., Inc., The, Div. of Eclipse Fuel Engineering Co., Rockford, Ill.
Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.
Minneapolis-Honeywell Regulator Co., Industrial Div., Philadelphia, Pa.
Norristown Asbestos Div., Nicolet Industries, Inc., Norristown, Pa.
Powers Regulator Co., Skokie, Ill.
Reliance Instrument Mfg. Corp., Glen Cove, Long Island, N. Y.
Shallcross Controls, Inc., Markesan, Wis.
Square D Co., Detroit, Mich.
Taller & Cooper, Inc., Brooklyn, N. Y.
Trerice Co., H. O., Detroit, Mich.
Westinghouse Electric Corp., Pittsburgh, Pa.
Whiddett Co., John C., Drexel Hill, Pa.
Will-Burt Co., Orrville, O.

BOILER CLEANING COMPOUNDS

See Compounds, Boiler Cleaning

BOILER FEED PUMPS

See Pumps, Boiler Feed

BOILER FEEDERS

See Feeders, Water, Heating Boiler

BOILER GAGES

See Gages, Liquid Level

BOILER OBSERVATION PORTS

See Ports, Observation, Boiler

BOILER SEALING COMPOUNDS

See Compounds, Boiler and Radiator Sealing

BOILER AND TANK INSULATION

See Insulation, Boiler and Tank

BOILER TUBES

See Tubes, Boiler

BOILER WATER ALARMS

See Alarms, High and Low Boiler Water

BOILERS, ELECTRIC

See Generators, Steam, Electric

BOILERS, HEATING, CAST IRON, SECTIONAL

2000 Sq Ft Steam Radiation and Over

Ackerman Gas Boiler Corp., McDonald, Pa.
American Radiator & Standard Sanitary Corp., Plumbing & Heating Div., New York, N. Y.
Bastian-Morley Co., Inc., LaPorte, Ind.
Bryant Mfg. Co., Indianapolis, Ind.
Burnham Corp., Irvington, N. Y.
Crane Co., Chicago, Ill.
Dunkirk Radiator Corp., Dunkirk, N. Y.
Hydrotherm, Inc., Northvale, N. J.
Mueller Climatrol, Div. of Worthington Corp., Milwaukee, Wis.
Nation-U. S. Radiator Corp., Johnstown, Pa.
Peerless Heater Co., The, Div. of the Eastern Foundry Co., Boyertown, Pa.
Pennsylvania Furnace & Iron Co., Warren, Pa.
Prox Co., Inc., Frank, Terre Haute, Ind.
Rheem Mfg. Co., Chicago, Ill.
Richmond Plumbing Fixtures Div., Rheem Mfg. Co., Metuchen, N. J.
Smith Co., Inc., H. B., The, Westfield, Mass.
Surface Combustion Corp., Toledo, O.
Weil-McLain Co., Michigan City, Ind.

BOILERS, HEATING, STEEL, FIRE TUBE

2000 Sq Ft Steam Radiation and Over

Ajax Boiler & Heater Co., Gardena, Calif.
Aldrich Co., Wyoming, Ill.
Atlantic Steel Boiler Co., Philadelphia, Pa.
Bigelow Co., New Haven, Conn.
Birchfield Boiler, Inc., Tacoma, Wash.
Bros, Inc., Minneapolis, Minn.
Burnham Corp., Irvington, N. Y.
Columbia Boiler Company of Pottstown, Pottstown, Pa.
Combustion Engineering, Inc., New York.
Crotty Mfg. Corp., Flushing, L. I., N. Y.
Dillon Steam Boiler Wks., Inc., D. M., Fitchburg, Mass.
Erie City Iron Wks., Erie, Pa.
Federal Boiler Co., Inc., Midland Park, N. J.
Fitzgibbons Boiler Co., Inc., New York, N. Y.
Gabriel Boiler & Fabrication Co., Portland, Ore.
Hamburg Boiler Works, Inc., Hamburg, Pa.
Hodge Boiler Wks., East Boston, Mass.
Johnston Bros., Inc., Ferrysburg, Mich.
Kewanee Boiler Div., American-Standard, Kewanee, Ill.
Leffel & Co., James, Springfield, O.
Mt. Hawley Mfg. Co., Inc., Peoria, Ill.
Murray Iron Wks. Co., Burlington, Ia.
National-U. S. Radiator Corp., Johnstown, Pa.
Orr & Sembower, Inc., Reading, Pa.
Pacific Steel Boiler Div., National-U. S. Radiator Corp., Johnstown, Pa. (320 sq ft thru 60710 sq ft)
Portmar Boiler Co., Inc., Brooklyn, N. Y.
Reif-Rexoil, Inc., Buffalo, N. Y.
Smith Twin Tubular Boiler Co., Inc., Philadelphia, Pa.
Spencer Heater, Lycoming Division, Avco Mfg. Corp., Williamsport, Pa.
Stout & Sons, David, St. Louis, Mo.
Struthers Wells Corp., Warren, Pa.
Terre Haute Boiler Works Co., Terre Haute, Ind.
Titusville Iron Wks. Co., The, Titusville, Pa.
Viking Mfg. Corp., Cleveland, O.
Western Boiler Co., Los Angeles, Calif.

BOILERS, HEATING, STEEL, TUBELESS

Anchor Div., Stratton & Terstegge Co., Inc., New Albany, Ind.
Axeman-Anderson Co., Williamsport, Pa.
Bryant Mfg. Co., Indianapolis, Ind.
Columbia Boiler Company of Pottstown, Pottstown, Pa.
Edwards Engineering Corp., Pompton Plains, N. J.
Embassy Steel Products, Inc., Brooklyn, N.Y.
Mt. Hawley Mfg. Co., Inc., Peoria, Ill.
Viking Mfg. Corp., Cleveland, O.
Wescott Snyder Mfg. Corp., Madison, N. J.

BOILERS, HEATING, STEEL, WATER TUBE

Ajax Boiler & Heater Co., Gardena, Calif.
Anchor Div., Stratton & Terstegge Co., Inc., New Albany, Ind.
Anetsberger Bros., Inc., Northbrook, Ill.

Atlantic Steel Boiler Co., Philadelphia, Pa.
Auburn Burner Co., Auburn, Ind.
Babcock & Wilcox Co., Boiler Div., New York, N. Y.
Bigelow Co., The, New Haven, Conn.
Boiler Engineering & Supply Co., Phoenixville, Pa. (for high temperature water)
Bros, Inc., Minneapolis, Minn.
Bryan Steam Corp., Peru, Ind.
Central States Steel Boiler Co., Chicago, Ill.
Columbia Boiler Company of Pottstown, Pottstown, Pa.
Combustion Engineering, Inc., New York, N. Y.
Erie City Iron Wks., Erie, Pa.
Gold Top Heating, Inc., San Gabriel, Calif.
Hercules Power Equipment Co., Los Angeles, Calif.
International Boiler Wks. Co., The, East Stroudsburg, Pa.
Keeler Co., E., Williamsport, Pa.
Murray Iron Wks. Co., Burlington, Ia.
Nebraska Boiler Company, Inc., Lincoln, Nebr.
Parker Boiler Mfg. Co., Sid E., Los Angeles, Calif.
Pastushin Industries, Inc., Los Angeles, Calif.
Queen City Engineering Co., Charlotte, N. C.
Raypak Co., Inc., Los Angeles, Calif.
Reif-Rexoil, Inc., Buffalo, N. Y.
Riley Stoker Corp., Worcester, Mass.
Rite Engineering & Mfg. Corp., Downey, Calif.
Springfield Boiler Co., Springfield, Ill.
Titusville Iron Works Co., The, Titusville, Pa.
V. & E. Products, Inc., Schuylkill Haven, Pa.
Vogt Machine Co., Henry, Louisville, Ky.
Wescott Snyder Mfg. Corp., Madison, N. J.
Western Boiler Co., Los Angeles, Calif.
Wickes Boiler Co., Saginaw, Mich.
Zingheim Co., William C., Chicago, Ill.

BOILERS, PACKAGED UNITS, HEATING AND PROCESS— *Including Controls, Feed Pump, etc.*

Ackerman Gas Boiler Corp., McDonald, Pa. (gas fired steam & water, 72,000 Btu to 1,500,000 Btu)
Ajax Boiler & Heater Co., Gardena, Calif.
American Radiator & Standard Sanitary Corp., Plumbing & Heating Div., New York, N. Y.
Ames Iron Works, Inc., Oswego, N. Y. (10 to 600 bhp)
Atlantic Steel Boiler Co., Philadelphia, Pa. (20 to 100 hp; gas and oil)
Axeman-Anderson Co., Williamsport, Pa. (coal & oil)
Babcock & Wilcox Co., Boiler Div., New York, N. Y.
Bethlehem Foundry & Machine Co., Bethlehem, Pa. (1.0 to 3.5 gph)
Bigelow Co., The, New Haven, Conn.
Birchfield Boiler, Inc., Tacoma, Wash.
Boiler Engineering & Supply Co., Phoenixville, Pa. (20 to 600 Hp, 15 to 250 psi oil-gas or combination fired)
Bros, Inc., Minneapolis, Minn.
Clayton Mfg. Co., El Monte, Calif. (15-160 hp; 65-300 psi; gas, oil, and combination)
Cleaver-Brooks Co., Milwaukee, Wis. (oil-gas: 15-60 hp; CB: 15-350 hp; LR: 400-600 hp; oil, gas and combination oil-gas)
Columbia Boiler Co. of Pottstown, Pottstown, Pa.
Combustion Engineering, Inc., New York, N. Y. (4,000 lb/Hr to 75,000 lb/Hr)
Crotty Mfg. Corp., Flushing, L. I., N. Y.
Cyclotherm Div., National-U. S. Radiator Corp., Oswego, N. Y.
Eclipse Fuel Engineering Co., Rockford, Ill
Edwards Engineering Corp., Pompton Plains, N. J. (100,000 to 600,000 Btu per hr; gas and oil)
Erie City Iron Works, Erie, Pa.
Fitzgibbons Boiler Co., Inc., New York, N. Y.
Foster Wheeler Corp., New York, N. Y.
Gabriel Boiler Co., Portland, Ore. (3-500 HP)
Hodge Boiler Wks., East Boston, Mass.
Hydrotherm, Inc., Northvale, N. J.
International Boiler Works Co., East Stroudsburgh, Pa.
Iron Fireman Mfg. Co., Cleveland, O.
Johnston Bros., Inc., Ferrysburg, Mich.
Keeler Co., E., Williamsport, Pa.
Kewanee Boiler Div., American-Standard, Kewanee, Ill.
Kisco Boiler & Engineering Co., St. Louis.
Lattner Mfg. Co., P. M., Cedar Rapids, Iowa
Leffel & Co., James, Springfield, O.
Littleford Bros., Inc., Cincinnati, O.
Lookout Boiler & Mfg. Co., Chattanooga, Tenn. (3 hp thru 80 hp — oil or gas)
Malsbary Mfg. Co., Oakland, Calif.
Martin Co., Inc., J. O., San Francisco, Calif.
Mears-Kane-Ofeldt, Inc., Div. S. T. Johnson Co., Bridgeport, Pa.
Murry Iron Works Co., Burlington, Ia.
Nebraska Boiler Co., Inc., Lincoln, Nebr.
Orr & Sembower, Inc., Reading, Pa.
Pacific Steel Boiler Div., National-U. S. Radiator Corp., Johnstown, Pa. (320 sq ft thru 60,710 sq ft oil or gas 15 psig steam, 30 psig water)
Pantex Mfg. Corp., Pawtucket, R. I.
Parker Boiler Mfg. Co., Sid E., Los Angeles, Calif. (1½ Hp - 125 Hp. Pressure to 200 psi. Gas, oil and combination firing)
Pastushin Industries, Inc., Los Angeles, Calif.
Petro, Cleveland, O. (up to 450 hp gas, oil and combination; high pressure)
Preferred Utilities Mfg. Corp., New York. (20 to 600 boiler hp. Design pressure from 15 to 250 psi. All grades of oil and gas or combination gas and oil)
Queen City Engineering Co., Charlotte, N. C. (300 to 17,500 lb of steam per hr; to 250 psi)
Ray Oil Burner Co., San Francisco, Calif.
Reif-Rexoil, Inc., Buffalo, N. Y.
Rite Engineering & Mfg. Corp., Downey, Calif.
SelecTemp Div., **Iron Fireman Mfg. Co., Cleveland, O. (114,000 to 1,000,000 Btu gas or oil)**
Sellers Engineering Co., Chicago, Ill.
Springfield Boiler Co., Springfield, Ill. (6,000 to 54,000 lb per hr, 200 to 900 psig, gas & oil fired)
Stewart-Warner Corp., Heating & Air Conditioning Div., Lebanon, Ind. (300 to 970 Sq ft steam; 555 to 1555 sq ft water)
Stout & Sons, David, St. Louis, Mo. (up to 420,000 sq ft EDR; up to 400 psig; gas and oil fuels)
Struthers Wells Corp., Warren, Pa.
Superior Combustion Industries, Inc., New York, N. Y. (fire tube 20-600 hp to 250 psi, oil, gas or both; water tube 8000 to 50,000 lb per hr., oil, gas or both)
Terre Haute Boiler Works Co., Terre Haute, Ind. (15 to 600 hp; 15 to 200 psi, steam)
Texsteam Corp., Houston, Tex.
Titusville Iron Works Co., The, Titusville, Pa.
Union Iron Works, Erie, Pa.
Vapor Heating Corp., Chicago, Ill.
Vogt Machine Co., Henry, Louisville, Ky. (10,000 to 40,000 lb of steam per hr capacities)
Way-Wolff Associates, Inc., Long Island City, N. Y.
Wescott Snyder Mfg. Corp., Madison, N. J. (oil & gas)
Western Boiler Co., Los Angeles, Calif.
Wickes Boiler Co., Saginaw, Mich.
York-Shipley, Inc., York, Pa.

BOILERS, PORTABLE, STEAM FOR STEAM CLEANING, MISCELLANEOUS PROCESS, OTHER USES

Bros, Inc., Minneapolis, Minn.
Eclipse Fuel Engineering Co., Rockford, Ill.
Lattner Mfg. Co., P. M., Cedar Rapids, Ia.
Leffel & Co., James, Springfield, O.
Lookout Boiler & Mfg. Co., Chattanooga, Tenn.
Murray Iron Wks. Co., Burlington, Ia.
Nebraska Boiler Co., Inc., Lincoln, Nebr.
Pantex Mfg. Corp., Pawtucket, R. I.
Pastushin Industries, Inc., Los Angeles, Calif.
Texstream Corp., Houston, Tex.
Vapor Heating Corp., Chicago, Ill.

BOLTS, EXPANSION

Arro Expansion Bolt Co., Marion, O.
Buffalo Bolt Co., Div. of Buffalo-Eclipse Corp., North Tonawanda, N. Y.
Chase Brass & Copper Co., Waterbury, Conn.
Chicago Expansion Bolt Co., Chicago, Ill.
Diamond Expansion Bolt Co., Inc., Garwood, N. J.
Fee & Mason Mfg. Co., Inc., Manasquan, N. J.
Harper Co., H. M., Morton Grove, Ill.
Holub Industries, Inc., Sycamore, Ill.
Industrial Screw Co., Chicago, Ill.
Line Material Industries, McGraw-Edison Co., Milwaukee, Wis.
National Lead Co., New York, N. Y.
Paine Co., Addison, Ill.
Phillips Drill Co., Michigan City, Ind.
Polis Mfg. Co., Div. of Gregory Industries, Lorain, O.
Rawlplug Co., Inc., The, New Rochelle, N. Y.
Star Expansion Industries Corp., Mountainville, N. Y.
U. S. Expansion Bolt Co., York, Pa.

BOLTS AND STUDS, FLANGE

Abbott Products, Inc., Whitestone, N. Y.
Anti-Corrosive Metal Products Co., Inc., Castleton-On-Hudson, N. Y.
Bethlehem Steel Co., Bethlehem, Pa.
Buffalo Bolt Co., Div. of Buffalo-Eclipse Corp., North Tonawanda, N. Y.
Carpenter & Paterson, Inc., Cambridge, Mass.
Chase Brass & Copper Co., Waterbury, Conn.
Clark Bros. Bolt Co., Milldale, Conn.
Continental Screw Co., New Bedford, Mass.
Erie Bolt & Nut Co., Erie, Pa.
Harper Co., H. M., Morton Grove, Ill.
Haskell Mfg. Co., Wm. H., Pawtucket, R. I.
Industrial Screw Co., Chicago, Ill.
Lamson & Sessions Co., Cleveland, O.
Mac-Lean-Fogg Lock Nut Co., Chicago, Ill.
Parker Seal Co., Culver City, Calif.
Pheoll Mfg. Co., Industrial Fastener Div., Chicago, Ill.
Polis Mfg. Co., Div. of Gregory Industries, Lorain, O.
Redi-Bolt, Inc., East Chicago, Ind.
Republic Steel Corp., Cleveland, O.
Rockford Screw Products Co., Rockford, Ill.
Russell, Purdsall & Ward Bolt & Nut Co., Port Chester, N. Y.
Victor Products Corp., Chicago, Ill.

BOLTS, TOGGLE AND ANCHOR

Arro Expansion Bolt Co., Marion, O.
Buffalo Bolt Co., Div. of Buffalo-Eclipse Corp., North Tonawanda, N. Y.
Carpenter & Paterson, Inc., Cambridge, Mass.
Chase Brass & Copper Co., Waterbury, Conn.
Chicago Expansion Bolt Co., Chicago, Ill.
Crawford Co., Chicago, Ill.
Diamond Expansion Bolt Co., Inc., Garwood, N. J.
Fastway Fasteners, Inc., Lorain, O.
Fee & Mason Mfg. Co., Inc., **Manasquan**, N. J.
Holub Industries, Inc., Sycamore, Ill.
Huck Mfg. Co., Detroit, Mich.
Industrial Screw Co., Chicago, Ill.
Line Material Industries, McGraw-Edison Co., Milwaukee, Wis.
Modern Hanger Corp., The, Cleveland, O.
Moore, Inc., Goodloe E., Danville, Ill.
Paine Co., Addison, Ill.
Phillips Drill Co., Michigan City, Ind.
Polis Mfg. Co., Div. of Gregory Industries, Lorain, O.
Rawlplug Co., Inc., The, New Rochelle, N. Y.
Republic Steel Corp., Cleveland, O.
Russell, Burdsall & Ward Bolt & Nut Co., Port Chester, N. Y.
Star Expansion Industries Corp., Mountainville, N. Y.
U. S. Expansion Bolt Co., York, Pa.
Western Wire Products Co., St. Louis, Mo (flattened lag)

BOLTS, "U"

Allmetal Screw Products Co., Inc., Garden City, Long Island, N. Y.
Bethlehem Steel Co., Bethlehem, Pa.
Buffalo Bolt Co., Div. of Buffalo-Eclipse Corp., North Tonawanda, N. Y.
Carpenter & Paterson, Inc., Cambridge, Mass.
Fee & Mason Mfg. Co., Inc., Manasquan, N. J.
Harper Co., H. M., Morton Grove, Ill.
Lamson & Sessions Co., The, Cleveland, O.
Leibfried Mfg. Corp., C. H., Brooklyn, N. Y.
Modern Hanger Corp., The, Cleveland, O.
Republic Steel Corp., Cleveland, O.
Steel City Electric Co., Pittsburgh, Pa.
U. S. Expansion Bolt Co., York, Pa.

BOOSTER TRANSFORMERS

See Transformers, Boost and Buck

BOOSTERS, GAS

Beach-Russ Co., New York, N. Y.
Bury Compressor Co., Erie, Pa.
Eclipse Fuel Engineering Co., Rockford, Ill.
Eisler Engineering Co., Inc., Newark, N. J.
Joy Mfg. Co., Pittsburgh, Pa.
Leiman Bros., Inc., Newark, N. J.
North American Mfg. Co., Cleveland, O.
Research Vacuum Supply Co., Chicago, Ill.
Roots-Connersville Blower, Div. of Dresser Industries, Inc, Connersville, Ind.

BOOTHS, PAINTING, SPRAY

Binks Mfg. Co., Chicago, Ill.
Black Mfg. Co., The, Baltimore, Md.
Burdett Mfg. Co., Chicago, Ill.
Carolina Blower Co., Inc., Greensboro, N. C.
Centri-Spray Corp., Livonia, Mich. (wet type)
David-Ludwig Co., Detroit, Mich.
DeVilbiss Co., The, Toledo, O.
DeVilbiss Metal Fabricators Co., Detroit, Mich.
Goethel Sheet Metal Works, Inc., Alfred, Milwaukee, Wis.
Griffin & Co., Louisville, Ky.
Kirk & Blum Mfg. Co., Cincinnati, O.
Lumm Co., A. H., Toledo, O.
M & E Mfg. Co., Indianapolis, Ind.
Mahon Co., R. C., The, Detroit, Mich.
Newcomb-Detroit Co., Detroit, Mich.
Plummer Spray Equipment Co., Napolean, O.
Ramco Equipment Corp., New York, N. Y.
Schmieg Industries, Inc., Detroit, Mich.
Spray Engineering Co., Burlington, Mass.
United Sheet Metal Co., Inc., Columbus, O.
Young & Bertke Co., Cincinnati, O.

BRAKES, SHEET METAL, HAND

Barth Engineering & Mfg. Co., Inc., Milldale, Conn.
Dreis & Krump Mfg. Co., Chicago, Ill.
Milton Equipment Co., Philadelphia, Pa.
Niagara Machine & Tool Works, Buffalo, N. Y.
O'Neil-Irwin Mfg. Co., Lake City, Minn.
Peck, Stow & Wilcox Co., Southington, Conn.
St. Louis Tool Co., St. Louis, Mo.
Whitney Metal Tool Co., Rockford, Ill.

BRAKES, SHEET METAL, PORTABLE

Auburn Machine Works, Inc., Auburn, Neb.
Barth Engineering & Mfg. Co., Inc., Milldale, Conn.
Dreis & Krump Mfg. Co., Chicago, Ill.
Milton Equipment Co., Philadelphia, Pa.
Niagara Machine & Tool Wks., Buffalo, N. Y.
O'Neil-Irwin Mfg. Co., Lake City, Minn.
Whitney Metal Tool Co., Rockford, Ill.

BRAKES, SHEET METAL, POWER

Bath Co., Cyril, The Solon, O.
Cincinnati Shaper Co., Cincinnati, O.
Cleveland Crane & Eng. Co., Wickliffe, O.
Diamond Machine Tool Co., Pico, Calif.
Dreis & Krump Mfg. Co., Chicago, Ill.
Excelsior Tool & Machine Co., East St. Louis, Ill.
Milton Equipment Co., Philadelphia, Pa.
Niagara Machine & Tool Wks., Buffalo, N. Y.
O'Neil-Irwin Mfg. Co., Lake City, Minn.
Peck, Stow & Wilcox Co., Southington. Conn.
Verson Allsteel Press Co., Chicago, Ill.
Verson Mfg. Co., The, Dallas, Tex.
Whitney Metal Tool Co., Rockford, Ill.
Wilson Co., K. R., Arcade, N. Y. (Hydraulic)

BRASS PIPE

See Pipe, Brass and Copper

BRASS TUBING

See Tubing, Brass and Copper

BRASS UNIONS

See Unions, Brass

BRASS VALVES

See Valves, Gate; and Valves, Globe

BRAZING ALLOYS

See Solder (Silver), Brazing Alloys and Fluxes

BRAZING TORCHES

See Torches, Brazing

BREAKERS, VACUUM (For Steam Using Equipment)

Associated Valve & Engineering Co., North Wales, Pa.
Bailey Co., Chas. M., San Francisco, Calif.
Foster Engineering Co., Union, N. J.
Hoffman Specialty Mfg. Corp., Indianapolis, Ind.
Jordan Corp., Div. of OPW Corp., Cincinnati, O.
McAlear Mfg. Co., Chicago, Ill.
Perfecting Service Co., Charlotte, N. C.
Schade Valve Mfg. Co., Philadelphia, Pa.
Schutte & Koerting Co., Cornwells Heights, Bucks County, Pa.
Simplex Valve & Meter Co., Philadelphia, Pa.
Watts Regulator Co., Lawrence, Mass.

BRONZE VALVES

See Valves, Gate; and Valves, Globe

BUILDING INSULATION

See Insulation, Building

BURNERS, GAS, COMMERCIAL AND INDUSTRIAL

Adams Mfg. Co., Cleveland, O.
Anchor Div., Stratton & Terstegge Co., Inc., New Albany, Ind.
Aston Products, Inc., Warren, Mich.
Auburn Burner Co., Edgerton, O.
Auburn Foundry Inc., Heating Div., Auburn, Ind.
Automatic Corp., St. Louis, Mo.
Barber Mfg. Co., Cleveland, O.
Best Combustion Equipment Co., Inc., W. N., Carlstadt, N. J.
Bryant Mfg. Co., Indianapolis, Ind.
Burdett Mfg. Co., Chicago, Ill.
Century Engineering Corp., Cedar Rapids, Ia.
Coen Co., San Francisco, Calif.
Coppus Engineering Corp., Worcester, Mass.
Dalzen Mfg. Co., St. Clair, Mich.
Downing Steel Products, Dayton, O.
Eclipse Fuel Engineering Co., Rockford, Ill.
Eisler Engineering Co., Inc., Newark, N. J.
Engineer Co., New York, N. Y.
Enterprise Engine & Machinery Co., Subsidiary of General Metals Corp., San Francisco, Calif.
Faber Engineering Co., Inc., Norristown, Pa.
Forney Engineering Co., Dallas, Tex.
Fuelguard Co., Dallas, Tex.
Gold Top Heating, Inc., San Gabriel, Calif.
Gordon & Piatt, Inc., Winfield, Kan.
Haney Burner Div., Southwest Gas Corp., Las Vegas, Nev.
Hastings Air Control, Inc., Omaha, Nebr.
Hauck Mfg. Co., Brooklyn, N. Y.
Industrial Combustion, Inc., Milwaukee, Wis.
Iron Fireman Mfg. Co., Cleveland, O.
Jackson & Church Co., Saginaw, Mich.
Jamieson Mfg. Co., Dallas, Tex.
Janitrol Heating & Air Conditioning Div., Surface Combustion Corp., Columbus, O.
Johnson Co., S. T., Oakland, Calif.
Johnson Gas Appliance Co., Cedar Rapids, Ia.
Johnston Bros., Inc., Ferrysburg, Mich.
Laharco Industries, Minneapolis, Minn.
Lattner Mfg. Co., P. M., Cedar Rapids, Ia.
Leahy Mfg. Co.. Los Angeles, Calif.
Leffel & Co., James, The, Springfield, O.
Lennox Industries, Inc., Marshalltown, Ia.
Lientz Co., B. P., Kansas City, Mo.
Martin Co., Inc., J. O., San Francisco, Calif.
Maxon Premix Burner Co., Muncie, Ind.
Mettler Co., Inc., The, Div. of Eclipse Fuel Engineering Co. Rockford, Ill.
Mid-Continent Metal Products Co., Chicago Ill.
National Airoil Burner Co., Inc., Philadelphia Pa.
Norman Products Co., Inc., Columbus, O.
North American Mfg. Co., Cleveland, O.
Nu-Way Corp., The, Rock Island, Ill.
Orr & Sembower, Inc., Reading, Pa.
Peabody Engrg. Corp., New York, N. Y.
Pennsylvania Furnace & Iron Co., Warren, Pa.
Petro, Cleveland, O.
Power-Flame Div., Inc., Grandview, Mo.
Radiant Heat & Cooling Co., Santa Clara, Calif.
Ransome Torch & Burner Co., Emeryville, Calif.
Ray Oil Burner Co., San Francisco, Calif.
Rayfield-Staffco Burner Co., Chicago, Ill.
Reif-Rexoil, Inc., Buffalo, N. Y.
Research Vacuum Supply Co., Chicago, Ill.
Riley Stoker Corp., Worcester, Mass.
Roberts-Gordon Appliance Corp., Buffalo, N. Y.
Schurs Oil Burner Co., Los Angeles, Calif.
Selas Corp. of America, Dresher, Pa.
Sellers Engineering Co., Chicago, Ill.
Silent Automatic Products, Cleveland, O.
Sonner Burner Co., Winfield, Kan.
Standard Fuel Engineering Co., Detroit, Mich.
Staples & Pfeiffer, San Francisco, Calif.
Stout & Sons, David, St. Louis, Mo.
Sullivan Valve & Engineering Co., Butte, Mont.
Superior Combustion Industries, Inc., New York, N. Y.
Surface Combustion Corp., Toledo, O.
Synchronous Flame, Inc., Walworth, Wis.
Todd Shipyards Corp., Products Div., Brooklyn, N. Y.
Utah Hydro Corp., Salt Lake City, Utah.
Vacuum Gas Burner Co., Olean, N. Y.
Wayne Home Equipment Co., Inc., Ft. Wayne, Ind.
Webster Engineering Co., Tulsa, Okla.
Wickes Boiler Co., The, Saginaw, Mich.
Williams Oil-O-Matic Heating Co., Div. of National Union Electric Corp., Columbus, O.
Wisconsin Burners Inc., Madison, Wis.
York-Shipley, Inc., York, Pa.
Zink Co., John, Tulsa, Okla.
Zurn Industries, Inc., Erie, Pa.

BURNERS, GAS, COMMERCIAL AND INDUSTRIAL, COMBINED WITH STOKER OR OVER COAL GRATES

Barber Mfg. Co., Cleveland, O.
Engineer Co., New York, N. Y.
Forney Engineering Co., Dallas, Tex.
Gordon & Piatt, Inc., Winfield, Kan.
Iron Fireman Mfg. Co., Cleveland, O.
Jackson & Church Co., Saginaw, Mich.
Leffel & Co., James, The Springfield, O.
Lientz Co., B. P., Kansas City, Mo.
Maxon Premix Burner Co., Muncie, Ind.
Mettler Co., Inc., The, Div. of Eclipse Fuel Engineering Co., Rockford, Ill.
Mid-Continent Metal Products Co., Chicago, Ill.
Norman Products Co., Columbus, O.
Riley Stoker Corp., Worcester, Mass.
Roberts-Gordon Appliance Corp., Buffalo, N. Y.
Webster Engineering Co., Tulsa, Okla.

BURNERS, GAS AND OIL COMBINED, COMMERCIAL AND INDUSTRIAL

Ace Engineering Co., Chicago, Ill.
Automatic Corp., St. Louis, Mo.
Babcock & Wilcox Co., Boiler Div., New York, N. Y.
Best Combustion Equipment Co., Inc., W. N., Carlstadt, N. J.
Coen Co., San Francisco, Calif.
Coppus Engineering Corp., Worcester, Mass.
Eclipse Fuel Engineering Co., Rockford, Ill
Engineer Co., New York, N. Y.
Enterprise Engine & Machinery Co., Subsidiary of General Metals Corp., San Francisco, Calif.
Faber Engineering Co., Inc., Norristown, Pa.
Forney Engineering Co., Dallas, Tex.
Gordon & Piatt, Inc., Winfield, Kan.
Hauck Mfg. Co., Brooklyn, N. Y.
Industrial Combustion, Inc., Milwaukee, Wis.
Iron Fireman Mfg. Co., Cleveland, O.
Jackson & Church Co., Saginaw, Mich.
Johnson Co., S. T., Oakland, Calif.
Johnston Bros., Inc., Ferrysburg, Mich.
Lammert & Mann Co., Chicago, Ill.
Leahy Mfg. Co., Los Angeles, Calif.
Leffel & Co., James, The, Springfield, O.
Lientz Co., B. P., Kansas City, Mo.
Maxon Premix Burner Co., Muncie, Ind.
Mettler Co., Inc., The, Div. of Eclipse Fuel Engineering Co., Rockford, Ill.
Mid-Continent Metal Products Co., Chicago, Ill.
National Airoil Burner Co., Inc., Philadelphia, Pa.
National-U. S. Radiator Corp., Johnstown, Pa.

North American Mfg. Co., Cleveland, O.
Orr & Sembower, Inc., Reading, Pa.
Peabody Engineering Corp., New York, N. Y.
Petro, Cleveland, O.
Power-Flame Div., Inc., Grandview, Mo.
Preferred Utilities Mfg. Corp., New York.
Ray Oil Burner Co., San Francisco, Calif.
Rayfield-Staffco Burner Co., Chicago, Ill.
Riley Stoker Corp., Worcester, Mass.
Roberts-Gordon Appliance Co., Buffalo, N. Y.
Rockwell Co., W. S., Fairfield, Conn.
Schurs Oil Burner Co., Los Angeles, Calif.
Simplex Oil Heating Corp., Philadelphia, Pa.
Sonner Burner Co., Winfield, Kan.
Staples & Pfeiffer, San Francisco, Calif.
Stout & Sons, David, St. Louis, Mo.
Superior Combustion Industries, Inc., New York, N. Y.
Surface Combustion Corp., Toledo, O.
Synchronous Flame, Inc., Walworth, Wis.
Todd Shipyards Corp., Products Div., Brooklyn, N. Y.
Utah Hydro Corp., Salt Lake City, Utah
Webster Engineering Co., Tulsa, Okla.
Wickes Boiler Co., The, Saginaw, Mich.
York-Shipley, Inc., York, Pa.
Zink Co., John, Tulsa, Okla.

BURNERS, NATURAL AND LP GAS, COMBINED, COMMERCIAL AND INDUSTRIAL

American Radiator & Standard Sanitary Corp., Plumbing & Heating Div., New York, N. Y.
Burdett Mfg. Co., Chicago, Ill.
Century Engineering Corp., Cedar Rapids, Ia.
Eclipse Fuel Engineering Co., Rockford, Ill.
Gold Top Heating, Inc., San Gabriel, Calif.
Gordon & Piatt, Inc., Winfield, Kans.
Hauck Mfg. Co., Brooklyn, N. Y.
Industrial Combustion, Inc., Milwaukee, Wis.
Johnson Gas Appliance Co., Cedar Rapids, Ia.
Leffel & Co., James, The, Springfield, O.
Mid-Continent Metal Products Co., Chicago, Ill.
Mutual Liquid Gas & Equipment Co., Gardena, Calif.
Norman Products Co., Inc., Columbus, O.
Orr & Sembower, Inc., Reading, Pa.
Power-Flame Div., Inc., Grandview, Mo.
Roberts-Gordon Appliance Corp., Buffalo, N. Y.
Rockwell Co., W. S., Fairfield, Conn.
Schurs Oil Burner Co., Los Angeles, Calif.
Sonner Burner Co., Winfield, Kans.
Stout & Sons, David, St. Louis, Mo.
Synchronous Flame, Inc., Walworth, Wis.

BURNERS, OIL, COMMERCIAL AND INDUSTRIAL

ABC-Federal Oil & Burner Co., Inc., Philadelphia, Pa. (rotary)
Ace Engineering Co., Chicago, Ill. (Rotary)
Aldrich Co., Wyoming, Ill.
American Radiator & Standard Sanitary Corp., Plumbing & Heating Div., New York, N. Y. (high pressure)
Anchor Div., Stratton & Terstegge Co., Inc., New Albany, Ind.
Auburn Burner Co., Auburn, Ind.
Automatic Burner Corp., Chicago, Ill. (high pressure)
Automatic Corp., St. Louis, Mo. (high pressure gun type)
Babcock & Wilcox Co., Boiler Div., New York, N. Y.
Beckett Corp., R. W., Elyria, O. (high pressure)
Best Combustion Equipment Co., Inc., W. N., Carlstadt, N. J.
Carlin Co., The, Wethersfield, Conn.
Century Engrg. Corp., Cedar Rapids, Ia. (high pressure atomizing)
Coen Co., San Francisco, Calif.
Columbia Boiler Co. of Pottstown, Pottstown, Pa.
Drying System Co., Chicago, Ill. (medium pressure atomizing)
Eclipse Fuel Engineering Co., Rockford, Ill.
Eds-Wil Burner Corp., Chicago, Ill.
Electrol Burner Mfg. Co., Inc., Rutherford, N. J. (high pressure atomizing)
Engineer Co., New York, N. Y.
Enterprise Engine & Machinery Co., Subsidiary of General Metals Corp., San Francisco, Calif. (rotary)
Faber Engineering Co., Inc., Norristown, Pa.
Forney Engineering Co., Dallas, Tex. (both steam atomizing & mechanical, high pressure)
Gilbert & Barker Mfg. Co., West Springfield, Mass. (high pressure atomizing)
Haney Burner Div., Southwest Gas Corp., Las Vegas, Nev. (steam atomizing)
Hardinge Oil Burner & Mfg. Co., Chicago, Ill.
Hauck Mfg. Co., Brooklyn, N. Y. (low pressure air type and high pressure steam type)
Industrial Combustion, Inc., Milwaukee, Wis. (low pressure air atomizing sizes from 1 to 150 gph and 720,000 to 21,000,000 max. Btu gas input per hr. For boilers up to 480 hp)
Ingersoll Conditioned Air Div., Borg-Warner Corp., Kalamazoo, Mich.
Iron Fireman Mfg. Co., Cleveland, O. (Rotary atomizing, high pressure atomizing)
Jackson & Church Co., Saginaw, Mich.
Johnson Co., S. T., Oakland, Calif. (high pressure atomizing; horizontal rotary)
Johnston Bros., Inc., Ferrysburg, Mich.
Kol-Master Corp., Oregon, Ill. (high pressure)
Kresky Mfg. Co., Inc., Petaluma, Calif. (hi-pressure atomizing; also forced-draft vaporizing retort-type)
Lammert & Mann Co., Chicago, Ill. (low pressure air or steam atomization)
Leahy Mfg. Co., Los Angeles, Calif.
Leffel & Co., James, The, Springfield, O.
Lennox Industries, Inc., Marshalltown, Ia. (high pressure)
Lientz Co., B. P., Kansas City, Mo. (steam atomizing)
Maxon Premix Burner Co., Muncie, Ind.
Mettler Co., Inc., The, Div. of Eclipse Fuel Engineering Co., Rockford, Ill. (high pressure atomizing and steam atomizing)
Montag Inc., Portland, Ore.
National Airoil Burner Co., Inc., Philadelphia, Pa. (low pressure, high pressure, steam rotary)
National Oil Burner Co. of N. Y. Inc., Brooklyn, N. Y. (horizontal rotary)
North American Mfg. Co., Cleveland, O. (low & high pressure atomizing; steam atomizing; variable capacity)
Nu-Way Corp., The, Rock Island, Ill.
Orr & Sembower, Inc., Reading, Pa. (air-atomizing) (Capacity range: 15 hp-500 hp. Fuels: Light oil, heavy oil or gas or any combination of these.)
Peabody Engrg. Corp., New York, N. Y.
Petro, Cleveland, O. (high pressure and rotary atomizing)
Preferred Utilities Mfg. Corp., New York, N. Y., (Rotary types; from 7½ gph to 175 gph.)
Quiet Automatic Oil Burner Corp., Newark, N. J. (up to 24 gph)
Radiant Utilities Corp., Brooklyn, N. Y.
Ray Oil Burner Co., San Francisco, Calif. (High pressure atomizing rotary)
Rayfield-Staffco Burner Co., Chicago, Ill. (low pressure atomizing and horizontal rotary)
Reif-Rexoil, Inc., Buffalo, N. Y. (high pressure atomizing .50 to 30 gph. No. 2 oil plus horizontal rotary heavy oil from 2 to 165 gph.)
Riley Stoker Corp., Worcester, Mass.
Rockwell Co., W. S., Fairfield, Conn.
Schurs Oil Burner Co., Los Angeles, Calif.
Schutte and Koerting Co., Cornwells Heights, Bucks County, Pa.
Silent Automatic Products, Cleveland, O.
Silent Glow Oil Burner Co., Hartford, Conn. (high pressure atomizing)
Simplex Oil Heating Corp., Philadelphia, Pa. (Low and high pressure atomizing, and horizontal rotary types)
Staples & Pfeiffer, San Francisco, Calif. (High pressure and steam atomizing, variable capacity)
Stewart-Warner Corp., Heating & Air Conditioning Div., Lebanon, Ind. (low and high pressure)
Stout & Sons, David, St. Louis, Mo.
Sun-Ray Burner Mfg. Corp., Jamaica, N. Y. (high pressure)
Superior Combustion Industries, Inc., New York, N. Y. (rotary)
Synchronous Flame, Inc., Walworth, Wis. (High pressure atomizing)
Todd Shipyards Corp., Products Div., Brooklyn, N. Y. (Variable capacity, rotary, pressure atomizing, steam atomizing)
Utah Hydro Corp., Salt Lake City, Utah
Wayne Home Equipment Co., Inc., Ft. Wayne, Ind. (high pressure)
Weatherall Engineers, Inc., Providence, R. I.
Webster Engineering Co., Tulsa, Okla.
Wickes Boiler Co., The, Saginaw, Mich. (steam atomizing)
Williams Oil-O-Matic Heating Co., Div. of National Union Electric Corp., Columbus, O.
Wisconsin Burners Inc., Madison, Wis.
York-Shipley, Inc., York, Pa. (Rotary, high pressure atomizing)
Zink Co., John, Tulsa, Okla.

BURNERS, PULVERIZED COAL, COMMERCIAL AND INDUSTRIAL

American Coal Burner & Wood Stoker Corp., Chicago, Ill.
Babcock & Wilcox Co., Boiler Div., New York, N. Y.
Combustion Engineering Inc., New York, N. Y.
Peabody Engineering Corp., New York, N. Y.
Riley Stoker Corp., Worcester, Mass.
Whiting Corp., Harvey, Ill.

BURNERS, PULVERIZED COAL AND GAS, COMBINED, COMMERCIAL AND INDUSTRIAL

Babcock & Wilcox Co., Boiler Div., New York, N. Y.
Combustion Engineering Inc., New York, N. Y.
Foster Wheeler Corp., New York, N. Y.
Peabody Engineering Corp., New York, N. Y.
Riley Stoker Corp., Worcester, Mass.

BURNERS, PULVERIZED COAL, GAS AND OIL COMBINED, COMMERCIAL AND INDUSTRIAL

Babcock & Wilcox Co., Boiler Div., New York, N. Y.
Combustion Engineering Inc., New York, N. Y.
Engineer Co., New York, N. Y.
Peabody Engineering Corp., New York, N. Y.
Riley Stoker Corp., Worcester, Mass.

BURNERS, PULVERIZED COAL AND OIL, COMBINED, COMMERCIAL AND INDUSTRIAL

Babcock & Wilcox Co., Boiler Div., New York, N. Y.
Combustion Engineering Inc., New York, N. Y.
Foster Wheeler Corp., New York, N. Y.
Peabody Engineering Corp., New York, N. Y.
Riley Stoker Corp., Worcester, Mass.

CABINETS FOR AIR CONDITIONERS, BOILERS, ETC.

See Parts For Heating and Air Conditioning Equipment

CABLE, ELECTRIC HEATING

Ceilheat, Inc., Knoxville, Tenn.
Chester Cable Corp., Chester, N. Y.
Cox & Co., Inc., New York, N. Y.
Dixie Raydiant Electric Heat Corp., Atlanta, Ga.
Electromode Div. of Commercial Controls Corp., Rochester, N. Y.
Everwarm, Inc., Knoxville, Tenn.
General Electric Co., Construction Materials Div., Bridgeport, Conn.
General Electric Co., Wiring Device Dept., Providence, R. I.
Miller Mfg. Co., St. Paul, Minn.
Modernheat Cable Corp., Kingsport, Tenn.
Nelson Electric Mfg. Co., Tulsa, Okla.
Preferred Utilities Mfg. Corp., New York, N. Y.
Rentip, Inc., Knoxville, Tenn.
Roberson Inc., Seattle, Wash.
S & C Mfg. Co., Cincinnati, O.
Sunwarm, Inc., Kingsport, Tenn.
Tennessee Plastics, Inc., Johnson City, Tenn.
Wesix Electric Heater Co., San Francisco, Calif.
Wiegand Co., Edwin L., Pittsburgh, Pa.
Wrap-On Co., Chicago, Ill.

CABLE AND WIRE, THERMOSTAT

Chester Cable Corp., Chester, N. Y.
Gavitt Wire & Cable Co., Div. of Amerace Corp., Brookfield, Mass.

General Controls Co., Glendale, Calif.
General Electric Co., Construction Materials Div., Bridgeport, Conn.
Roberson Inc., Seattle, Wash.
Wiegand Co., Edwin L., Pittsburgh, Pa.

CALCULATORS, AIR CONDITIONING, HEATING, VENTILATING, AND PIPING; SLIDE RULE

Airserco Mfg. Co., Inc., Pittsburgh, Pa.
American Instrument Co., Inc., Silver Spring, Md. (psychrometric calculator)
Armstrong Furnace Co., Div. of National Union Electric Corp., Columbus, O.
Calculator Specialties Co., Chicago, Ill.
Caliputer, Rancho Sante Fe, Calif.
Graphic Calculator Co., Chicago., Ill.
Morton Engineering Service, Paul S., Kalamazoo, Mich. (Btu calculator, area and volume calculator. Area and crackage calculator, Btuh calculator. Heat loss calculation & data sheets — padded. Electrical heat load, air ducts. Payroll tax calculator and interest calculator.)

CANOPIES, METAL, SUN, REFLECTING

Air Control Products, Inc., Coopersville, Mich.
American Warming & Ventilating Co., Toledo, O.
Childers Mfg. Co., Houston, Tex.
Construction Specialties, Inc., Cranford, N. J.
Hunter Douglas Aluminum Div., Bridgeport Brass Co., New York, N. Y.
Kawneer Co., Niles, Mich.
Russell Co., F. C., The, Cleveland, O.

CAPACITORS, ELECTRICAL, FOR POWER FACTOR CORRECTION

General Electric Co., Apparatus Sales Div., Schenectady, N. Y.
General Electric Co., Capacitor Dept., Ft. Edward, N. Y.
Line Material Industries, McGraw-Edison Co., Milwaukee, Wis.
Mallory & Co., Inc., P. R., Indianapolis, Ind.
Marathon Electric Mfg. Corp., Wausau, Wis.
Potter Co., The, North Chicago, Ill.
Sangamo Electric Co., Springfield, Ill.
Sprague Electric Co., North Adams, Mass.
Westinghouse Electric Corp., Pittsburgh, Pa.

CAPILLARY TUBING

See Tubing, Capillary, for Refrigerants

CAPS, VENT FLUE

Accurate Sheet Metal & Mfg. Works, Chicago, Ill.
Acme Mfg. Co., Philadelphia, Pa.
Adams Co., The, Dubuque, Iowa
Adelta Mfg. Co., Inc., Philadelphia, Pa.
Airjet Ventilator Co., San Clemente, Calif.
Ammerman Co., Inc., Stillwater, Minn.
Binks Mfg. Co., Chicago, Ill.
Boston Machine Works Co., Lynn, Mass.
Breidert Co., G. C., San Fernando, Calif.
Champion Furnace Pipe Co., Peoria, Ill.
Coleman Co., Inc., The, Wichita, Kan.
Corbman Bros., Inc., Philadelphia, Pa.
Enderle, Inc., Ltd., Frank X., Los Angeles, Calif.
Excelsior Steel Furnace Co., The, Chicago, Ill.
Hart & Cooley Mfg. Co., Holland, Mich.
Leslie Welding Co., Inc., Chicago, Ill.
Mirror Patented Stove Pipe Co., Hartford, Conn.
Ohio Foundry & Mfg. Co., Steubenville, O.
Oil Equipment Mfg. Corp., New Haven, Conn.
Penn Ventilator Co., Philadelphia, Pa.
Preferred Utilities Mfg. Corp., New York, N. Y.
Robinson Clay Products Co., The, Akron, O.
Tesco, Inc., Tulsa, Okla.
Walker Mfg. & Sales Co., St. Joseph, Mo.
Wallace Co., William, Metalbestos Div., Belmont, Calif.
Waverly Heating Supply Co., Beverly, Mass.
Wood Mfg. Co., A. R., Luverne, Minn.

CARBON DIOXIDE ANALYZERS

See Analyzers, Carbon Dioxide, Portable

CARBON DIOXIDE INDICATORS

See Indicators, Carbon Dioxide, Boiler Room

CARBON MONOXIDE DETECTORS

See Detectors, Carbon Monoxide

CARBON PIPE, TUBING, FITTINGS AND VALVES

See Pipe, Tubing, Fittings and Valves, Carbon and Graphite

CAST IRON PIPE

See Pipe, Cast Iron

CATALOG HOLDERS AND FILES

See Holders and Files, Catalog, for Engineers' and Contractors' Offices

CEILINGS, RADIANT, HEATING AND COOLING, AND ACOUSTICAL CONTROL

Also see Coils and Panels, Radiant Heating and Cooling, Prefabricated

Airtex Corp., Chicago, Ill.
Burgess-Manning Co., Architectural Products Div., Chicago, Ill.
Multi-Vent Div., Pyle National Co., The, Chicago, Ill.
Simplex Ceiling Corp., New York, N. Y.

CEMENT AND COMPOUNDS, PIPE JOINT

Acorn Refining Co., Cleveland, O.
American Sealants Co., Hartford, Conn.
Arco Co., The, Cleveland, O.
Armite Laboratories, Los Angeles, Calif.
Atlas Mineral Products Co., Mertztown, Pa.
Babbitt Chemical Co., Inc., New Bedford, Mass.
Barrett Div., Allied Chemical & Dye Corp., New York, N. Y.
Baso, Inc., Milwaukee, Wis.
Belmont Smelting & Refining Wks., Inc., Brooklyn, N. Y.
Black & White Chemical Co., New York, N. Y.
Blue Ridge Talc Co., Inc., Henry, Va.
Blue Seal Chemical Co., Roselle Park, N. J.
Cabot, Inc., Samuel, Boston, Mass.
Calbar Paint & Varnish Co., Philadelphia, Pa.
Carey Mfg. Co., Philip, Lockland, Cincinnati, O.
Crane Co., Chicago, Ill.
Crane Packing Co., Morton Grove, Ill.
Croll & Son, Jesse G., Philadelphia, Pa.
Dixon Crucible Co., Joseph, Jersey City, N. J.
Fibercast Co., Sand Spring, Okla.
Flexrock Co., Philadelphia, Pa.
Garlock Packing Co., Palmyra, N. Y.
Gasoilair Equipment Co., New Haven, Conn.
Gilbreth Co., The, Philadelphia, Pa.
Goodrich Industrial Products Co., B. F., Akron, O.
Greene, Tweed & Co., North Wales, Pa.
Grinnell Co., Inc., Providence, R. I.
Hercules Chemical Co., Inc., New York, N. Y.
Highside Chemicals, Inc., Clifton, N. J.
Horn Companies, A. C., Subsidiary of Sun Chemical Corp., New York, N. Y.
Industrial Plastic Fabricators, Norwood, Mass.
Jet-Lube, Inc., Burbank, Calif.
Johns-Manville, New York, N. Y.
Kenite Laboratory, Madison, N. J.
Lake Chemical Co., Chicago, Ill.
Macksons Co., New York, N. Y.
Minnesota Mining & Mfg. Co., St. Paul, Minn.
Montgomery Bros., San Francisco, Calif.
Moran Paint Co., Xenia, O.
Nebel Mfg. Co., Cleveland, O.
Pecora Inc., Philadelphia, Pa.
Permatex Co., Inc., Long Island, N. Y.
Preferred Utilities Mfg. Corp., New York, N. Y.
Quigley Co., Inc., New York, N. Y.
Radiator Specialty Co., Charlotte, N. C.
Rectorseal Div., Rector Well Equipment Co., Houston, Tex.
Robinson Clay Product Co., The, Akron, O.
Rubber Products Div., Parker-Hannifin Corp., Cleveland, O.
Rutland Fire Clay Co., Rutland, Vt.
S. O. S. Products Co., Inc., Brooklyn, N. Y.
Sauereisen Cements Co., Pittsburgh, Pa.
Saverite Engineering Co., Hoboken, N. J.
Schwartz Chemical Co., Inc., Long Island City, N. Y. (for joining plastic pipe)
Sexauer Mfg. Co., Inc., J. A., New York, N. Y.
Smooth-On Mfg. Co., Jersey City, N. J.
Spring Packing Corp., Chicago, Ill.
Sulflo, Inc., Elizabeth, N. J.
Triangle Conduit & Cable Co., Inc., New Brunswick, N. J.
Tube Turns Plastics, Inc., Louisville, Ky. (PVC pipe)
United States Rubber Co., New York, N. Y.
United States Stoneware Co., New York, N. Y.
W-K-M, Div. of ACF Industries, Inc., Houston, Tex.
Whitlam Mfg. Co., J. C., Wadsworth, O.
Wilhelm Co., A., Reading, Pa.
X Laboratories, Inc., New York, N. Y.
X-Pando Corp., Long Island City, N. Y.

CEMENT, FURNACE

Acme Asbestos Covering & Flooring Co., Chicago, Ill.
Armstrong Cork Co., Lancaster, Pa.
Asbestos Asphalt Insulation Co., Chicago, Ill.
Babcock & Wilcox Co., Boiler Div., New York, N. Y.
Botfield Refractories Co., Philadelphia, Pa.
Carey Mfg. Co., Philip, Lockland, Cincinnati, O.
Clinton Metallic Paint Co., Clinton, N. Y. (Asbestos)
Dixon Crucible Co., Joseph, Jersey City, N. J.
France Refractories Co., J. H., Snow Shoe, Pa.
Grant Wilson, Inc., Chicago, Ill.
Green Fire Brick Co., Mexico, Mo.
Hercules Chemical Co., Inc., New York, N. Y.
Johns-Manville, New York, N. Y.
Lastik Products Co., Inc., Pittsburgh, Pa.
Nebel Mfg. Co., Cleveland, O.
Nicolet Industries, Inc., Hamilton, O.
Norton Co., Worcester, **Mass.**
Pecora Inc., Philadelphia, Pa.
Plastic Products Co., Detroit, Mich.
Plibrico Co., Chicago, Ill.
Pyrolite Products Co., Cleveland, O.
Quigley Co., Inc., New York, N. Y.
Refractory & Insulation Corp., New York, N. Y.
Rex Roto Corp., Walled Lake, Mich.
Rutland Fire Clay Co., Rutland, Vt.
S. O. S. Products Co., Inc., Brooklyn, N. Y.
Sauereisen Cements Co., Pittsburgh, Pa.
Smooth-On Mfg. Co., Jersey City, N. J.
Standard Asbestos Mfg. Co., Chicago, Ill.
Standard Fuel Engineering Co., Detroit, Mich.
Taylor Sons Co., Charles, Cincinnati, O.

CEMENT, INSULATING

Acme Asbestos Covering & Flooring Co., Chicago, Ill.
Armstrong Cork Co., Lancaster, Pa.
Asbestos Asphalt Insulation Co., Chicago, Ill.
Atlas Mineral Products Co., Mertztown, Pa.
Baldwin-Hill Co., Trenton, N. J. (mineral wool)
Bigelow Liptak Corp., Detroit, Mich.
Bird-Archer Co., Philadelphia, Pa.
Botfield Refractories Co., Philadelphia, Pa.
Carey Mfg. Co., Philip, Lockland, Cincinnati, O.
Eagle-Picher Co., Cincinnati, O.
Ehret Magnesia Mfg. Co., Valley Forge, Pa.
Forty-Eight Insulations, Inc., Aurora, Ill.
France Refractories Co., J. H., Snow Shoe, Pa.
Grant Wilson, Inc., Chicago, Ill.
Green Fire Brick Co., Mexico, Mo.
International Vermiculite Co., Girard, Ill.
Johns-Manville, New York, N. Y.
Keasbey & Mattison Co., Ambler, Pa. (85 per cent magnesia)
Minnesota Mining & Mfg. Co., St. Paul, Minn.
Moore, Inc., Goodloe E., Danville, Ill.
Mortell Co., J. W., Kankakee, Ill.
Mundet Cork Corp., North Bergen, N. J.
Munn and Steele, Inc., South Boston, Mass.
Nelson Mfg. Co., B. F., Minneapolis, Minn.
Nicolet Industries, Inc., Hamilton, O.
Norristown Asbestos Div., Nicolet Industries, Inc., Norristown, Pa.
North American Asbestos Corp., Chicago, Ill.
Pabco Industrial Insulations Div., Fibreboard Paper Products Corp., San Francisco, Calif. (85% magnesia)

Pacific States Felt & Mfg. Co., Inc., San Francisco, Calif.
Plibrico Co., Chicago, Ill.
Poe Co., C. W., Cleveland, O.
Quigley Co., Inc., New York, N. Y.
Refractory & Insulation Corp., New York.
Rex Clay Products Co., Detroit, Mich.
Ruberoid Co., New York, N. Y.
Rutland Fire Clay Co., Rutland, Vt.
Sauereisen Cements Co., Pittsburgh, Pa.
Smith & Kanzler Corp., Linden, N. J.
Spring Packing Corp., Chicago, Ill.
Standard Asbestos Mfg. Co., Chicago, Ill.
Standard Fuel Engineering Co., Detroit, Mich.
Stic-Klip Mfg. Co., Inc., Cambridge, Mass.
United States Mineral Wool Co., Stanhope, N. J.
Zonolite Co., Chicago, Ill.

CENTRIFUGAL PUMPS
See Pumps, Centrifugal

CERAMIC PIPE
See Pipe, Stoneware

CHAIN DRIVES
See Drives, Chain

CHAMBERS, COMBUSTION, PREFORMED
Armstrong Cork Co., Lancaster, Pa.
Barclay, Inc., Robert, Chicago, Ill.
Bemco, Inc., North Hollywood, Calif.
Boston Machine Works Co., Lynn, Mass.
France Refractories Co., J. H., Snow Shoe, Pa.
Gem Clay Forming Co., Sebring, O.
Grant Wilson, Inc., Chicago, Ill.
Green Fire Brick Co., Mexico, Mo.
Lindy Heaters, Inc., New York, N. Y.
Monogram Products Co., Inc., Philadelphia, Pa.
Munn & Steele, Inc., South Boston, Mass.
Oil Equipment Mfg. Corp., New Haven, Conn.
Preferred Utilities Mfg. Corp., New York, N. Y.
Refractory & Insulation Corp., New York, N. Y.
Rex Clay Products Co., Detroit, Mich.
Rex Roto Corp., Walled Lake, Mich.
S. O. S. Products Co., Inc., Brooklyn, N. Y.

CHAMBERS, TEST, CONTROLLED TEMPERATURE AND HUMIDITY
American Instrument Co., Inc., Silver Spring, Md.
Aminco Refrigeration Products, American Injector Co., Detroit, Mich.
Anetsberger Brothers, Inc., Northbrook, Ill.
Drying Systems Co., Chicago, Ill.
Reco Products Div., Recony Corp., New York, N. Y.
Tenney Engineering, Inc., Union, N. J.
Thompson Research & Mfg. Co., Davenport, Fla.
York Corp., Subsidiary of Borg-Warner Corp., York, Pa.

CHANGERS, SPEED, HYDRAULIC COUPLING
American Blower Div. of American-Standard, Detroit, Mich.
CraneVeyor Corp., Los Angeles, Calif.
Twin Disc Clutch Co., Rockford, Ill.

CHANGERS, SPEED, MAGNETIC
Allis Co., Louis, The, Milwaukee, Wis.
Doerr Electric Corp., Cedarburg, Wis.
Electric Machinery Mfg. Co., Minneapolis, Minn.
Electro-Dynamic Div. of General Dynamics Corp., Bayonne, N. J.
Janette Electric Mfg. Co., Morton Grove, Ill.

CHANGERS, SPEED, MECHANICAL
Abart Gear & Machine Co., Chicago, Ill.
Allis-Chalmers Mfg. Co., Milwaukee, Wis.
Allis Co., Louis, The, Milwaukee, Wis.
Boston Gear Works, Quincy, Mass.
Chicago Die Casting Mfg. Co., Chicago, Ill.
Cleveland Worm & Gear Co., Cleveland, O.
Custanite Corp., Brooklyn, N. Y.
DoAll Co., The, Des Plaines, Ill.
Dodge Mfg. Corp., Mishawaka, Ind.
Doerr Electric Corp., Cedarburg, Wis.
Driv-Way Lite Co., Denver, Colo.
Graham Transmissions, Inc., Menomonee Falls, Wis.
Horton Mfg. Co., Inc., Minneapolis, Minn.
Lewellen Mfg. Co., Columbus, Ind.
Lima Electric Motor Co., Inc., The, Lima, O.
Link Belt Co., Chicago, Ill.
Lovejoy Flexible Coupling Co., Chicago, Ill.
Master Electric Co., Div. of Reliance Electric & Engineering Co., Dayton, O.
Maurey Mfg. Corp., Chicago, Ill.
Morse Chain Co., Ithaca, N. Y.
Philadelphia Gear Corp., Philadelphia, Pa.
Philadelphia Pump Div., American Meter Co., Philadelphia, Pa.
Reeves Pulley Co., Div. of Reliance Electric & Engineering Co., Columbus, Ind.
Reliance Electric & Engineering Co., Cleveland, O. (electrical & mechanical drives)
Sealmaster Bearings, Div. of Stephens-Adamson Mfg. Co., Aurora, Ill.
Speed Selector Inc., Chagrin Falls, O.
Sterling Electric Motors, Inc., Los Angeles, Calif.
U. S. Electrical Motors, Inc., Los Angeles, Calif.
Woods Sons Co., T. B., Chambersburg, Pa.
Worthington Corp., East Orange, N. J.
Zurn Industries, Inc., Erie, Pa. (synchronizing friction clutch)

CHASERS, PIPE AND BOLT
Armstrong-Bridgeport Tool Mfg. Corp., Belleville, N. J.
Armstrong Bros. Tool Co., Chicago, Ill.
Beaver Pipe Tools, Inc., Warren, O.
Greenfield Tap & Die Div. of United Greenfield Corp., Greenfield, Mass.
Landis Machine Co., Inc., Waynesboro, Pa.
Nye Tool Co., Chicago, Ill.
Oster Mfg. Co., Wickliffe, O.
Ridge Tool Co., Elyria, O.
Saunders Mfg. Co., Yonkers, N. Y.
Toledo Pipe Threading Machine Co., Toledo, O.

CHASERS, THREADING DIE
Airserco Mfg. Co., Inc., Pittsburgh, Pa.
Armstrong-Bridgeport Tool Mfg. Corp., Belleville, N. J.
Armstrong Bros. Tool Co., Chicago, Ill.
Beaver Pipe Tools, Inc., Warren, O.
Erie Tool Works, Erie, Pa.
Greenfield Tap & Die Div. of United Greenfield Corp., Greenfield, Mass.
Landis Machine Co., Inc., Waynesboro, Pa.
Nye Tool Co., Chicago, Ill.
Oster Mfg. Co., Wickliffe, O.
Ridge Tool Co., Elyria, O.
Saunders Mfg. Co., Yonkers, N. Y.
Snap-on Tools Corp., Kenosha, Wis.
Toledo Pipe Threading Machine Co., Toledo, O.

CHECK VALVES
See Valves, Check

CHILLERS, WATER, FOR AIR CONDITIONING AND REFRIGERATION
Acme Industries, Inc., Jackson, Mich.
Alstrom Corp., New York, N. Y.
American Coils Co., Farmingdale, N. J.
Arkla Air Conditioning Corp., Little Rock, Ark.
Armstrong Co., Richard M., West Chester, Pa.
Bell & Gossett Co., Morton Grove, Ill.
Carrier Corp., Syracuse, N. Y.
Chrysler Airtemp, Div. of Chrysler Corp., Dayton, O.
Condenser Service & Engineering Co., Inc., Hoboken, N. J.
Cool-Ette, Inc., Detroit, Mich.
Curtis Mfg. Co., Refrigeration Div., St. Louis, Mo.
Davis Engineering Corp., Elizabeth, N. J.
Dole Refrigeratng Co., Chicago, Ill.
Doyle & Roth Mfg. Co., Inc., Brooklyn, N. Y.
Drayer-Hanson, Div. of National-U. S. Radiator Corp., Los Angeles, Calif.
Ellis & Watts Products, Inc., Cincinnati, O.
Embassy Steel Products, Inc., Brooklyn, N. Y.
Frick Co., Waynesboro, Pa.
Graham Mfg. Co., Inc., New York, N. Y.
Griscom-Russell Co., The, Massillon, O.
Heat-Exchangers, Inc., Chicago, Ill.
Heat-X Inc., Subsidiary of Dunham-Bush, Inc., West Hartford, Conn.
Heatron, Inc., York, Pa.
Howe Ice Machine Co., Chicago, Ill.
Hydrotherm, Inc., Northvale, N. J.
Kennard Products, American Air Filter Co., Inc., Louisville, Ky.
King Zeero Co., The, Chicago, Ill.
National-U.S. Radiator Corp., Johnstown, Pa.
Niagara Blower Co., New York, N. Y.
Patterson-Kelley Co., Inc., The, East Stroudsburg, Pa.
Peerless of America, Inc., Chicago, Ill.
Process Engineering, Inc., Methuen, Mass.
Reco Products Div., Recony Corp., New York, N. Y.
Sims Co., Erie, Pa.
Taco Heaters, Inc., Cranston, R. I.
Temprite Products Corp., Dept HPAC, Birmingham, Mich.
Trane Co., The, LaCrosse, Wis.
Typhoon Air Conditioning Co., Div. of Hupp Corp., Brooklyn, N. Y.
Typhoon Heat Pump Co., Div. of Hupp Corp., Tampa, Fla.
Vic Mfg. Co., Minneapolis, Minn.
Vilter Mfg. Co., The, Milwaukee, Wis.
Watkins Co., J. E., Maywood, Ill.
Weather King of Florida, Inc., Orlando, Fla.
Westinghouse Electric Corp., Air Conditioning Div., Staunton, Va.
Whitlock Mfg. Co., W. Hartford, Conn.
Worthington Corp., East Orange, N. J.
X L Refrigerating Co., Chicago, Ill.
York Corp., Subsidiary of Borg-Warner Corp., York, Pa.
Yula Corp., Bronx, N. Y.

CHILLERS, WATER, PACKAGED
See Compressors, Refrigerating, Combined with Condenser, Water Chiller, Piping Connections and Controls

CHIMNEYS, PREFABRICATED
See Stacks and Chimneys, Industrial, Prefabricated

CHLORINATORS, WATER
American Sanitary Mfg. Co., Abingdon, Ill.
Aquatrol Ferr-X Corp., Clifton, N. J.
Builders-Providence Div., B-I-F Industries, Inc., Providence, R. I.
Clayton Mark & Co., Evanston, Ill.
Culligan, Inc., Northbrook, Ill.
Dearborn Chemical Co., Chicago, Ill.
Fischer & Porter Co., Hatboro, Pa.
Radiant Utilities Corp., Brooklyn, N. Y.
Uniflow Mfg. Co., Erie, Pa.
Wallace & Tiernan Inc., Belleville, N. J.

CIRCULATORS FOR HOT WATER HEATING SYSTEMS
Baseline Mfg. Corp. of Fla., St. Petersburg, Fla.
Bell & Gossett Co., Morton Grove, Ill.
Chicago Pump Co., Subsidiary of Food Machinery & Chemical Corp., Chicago, Ill.
Columbus Steam Pump Works Co., Columbus, O.
Dayton Electric Mfg. Co., Chicago, Ill.
Dunham-Bush, Inc., Hartford, Conn.
Econo Products Co., Inc., Div. of Viking Instruments, Inc., East Haddam, Conn.
Federal Pump Corp., Brooklyn, N. Y.
Hoffman Specialty Mfg. Corp., Indianapolis.
Kehm Corp., The, Chicago, Ill.
Kraissl Co., Inc., The, Hackensack, N. J.
Metalmaster Corp., Newark, N. J.
Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.
Stout & Sons, David, St. Louis, Mo.
Taco Heaters, Inc., Cranston, R. I.
Thrush & Co., H. A., Peru, Ind.
Trane Co., The, LaCrosse, Wis.
Triplex Heating Specialty Co., Inc., Peru, Ind.
Weil Pump Co., Chicago, Ill.
Wheeler Mfg. Co., C. H., Economy Pump Div., Philadelphia, Pa.

CLAMPS, BEAM, DUCT HANGING

Tinnerman Corp., George A., Cleveland, O.

CLAMPS, BEAM, PIPE HANGING

Basic Engineers, Inc., Sharpsburg, Pa.
Blaw Knox Co., Power Piping & Sprinkler Div., Pittsburgh, Pa.
Carpenter & Paterson, Inc., Cambridge, Mass.
Crawford Co., Chicago, Ill.
Diamond Expansion Bolt Co., Inc., Garwood, N. J.
Fee & Mason Mfg. Co., Inc., Manasquan, N. J.
Frick Co., Waynesboro, Pa.
Gateway Engineering Co., Chicago, Ill.
Globe Products, Huppower Div., Hupp Corp., Detroit, Mich.
Grabler Mfg. Co., Cleveland, O.
Grinnell Co., Providence, R. I.
Holub Industries, Inc., Sycamore, Ill.
Industrial Tubular Equipment Co., North Hollywood, Calif.
Leibfried Mfg. Corp., C. H., Brooklyn, N. Y.
Modern Hanger Corp., The, Cleveland, O.
Moore, Inc., Goodloe E., Danville, Ill.
Mult-A-Frame Div., Ainsworth Mfg. Corp., Detroit, Mich.
National Valve & Mfg. Co., Pittsburgh, Pa.
Paine Co., Addison, Ill.
Rockwood Sprinkler Co., Worcester, Mass.
Steel City Electric Co., Pittsburgh, Pa.
Unistrut Products Co., Chicago, Ill.

CLAMPS, HOSE AND TUBING

Allen Mfg. Co., W. D., Bellwood, Ill.
Band-It Co., Denver, Colo.
Binks Mfg. Co., Chicago, Ill.
Breeze Corporations, Inc., Union, N. J.
Chicago Pneumatic Tool Co., New York, N. Y.
Circle Clamp Corp., New York, N. Y.
Continental Rubber Wks., Erie, Pa.
Corbin Hose Clamp Div., American Hardware Corp., New Britain, Conn.
Flexible Tubing Corp., Guilford, Conn.
Goodall Rubber Co., Trenton, N. J.
Holub Industries, Inc., Sycamore, Ill.
Ideal Corp., Brooklyn, N. Y.
LE-HI Div., Hose Accessories Co., Philadelphia, Pa.
Manufacturers Corp., Mansfield, O.
Marman Div., Aeroquip Corp., Los Angeles, Calif.
Murry Co., Towson, Md.
Nylon Moulding Corp., Garwood, N. J.
Polymer Corp., The Reading, Pa.
Punch-Lok Co., Chicago, Ill.
Research Vacuum Supply Co., Chicago, Ill.
Richo Plastic Co., Chicago, Ill.
Scovill Mfg. Co., Waterbury, Conn.
Thor Power Tool Co., Aurora, Ill.
Tinnerman Corp., George A., Cleveland, O.
United States Rubber Co., New York, N. Y.
Wittek Manufacturing Co., Chicago, Ill.

CLAMPS, PIPE REPAIR

Adams Pipe Repair Products, El Monte, Calif.
Atlas Industries, Inc., Houston, Tex.
Baker & Co., R. H., Los Angeles, Calif.
Band-It Co., Denver, Colo.
Burlis Products Co., Brooklyn, N. Y.
Chelsea Metal Stamping Co., New York, N. Y.
Chicago Specialty Mfg. Co., Chicago, Ill.
Clow & Sons, Inc., James B., Chicago, Ill.
Dresser Mfg. Div., Dresser Industries, Inc., Bradford, Pa.
Holub Industries, Inc., Sycamore, Ill.
Ideal Corp., Brooklyn, N. Y.
Inner-Tite Div. of Yara Engineering Corp., Elizabeth, N. J.
Ladish Co., Tri-Clover Div., Kenosha, Wis.
Leibfried Mfg. Corp., C. H., Brooklyn, N. Y.
Marman Div., Aeroquip Corp., Los Angeles, Calif.
Morris Coupling & Clamp Co., Kittanning, Pa.
Pipe Line Development Co., Cleveland, O.
Ritter Pattern & Casting Co., Inc., New York, N. Y.
Skinner Co., M. B., South Bend, Ind.
Smith-Blair, Inc., South San Francisco, Calif.
Victaulic Co. of America, Elizabeth, N. J.

CLAMPS, PIPE, WELDING

Adjustable Clamp Co., Chicago, Ill.
Atlas Welding Accessories Inc., Ferndale, Mich.
Billings & Spencer Co., Hartford, Conn.
Custanite Corp., Brooklyn, N. Y.
Detroit Stamping Co., Detroit, Mich.
Jewel Mfg. Co., St. Paul, Minn.
Leibfried Mfg. Corp., C. H., Brooklyn, N. Y.
Lenco, Inc., Jackson, Mo.
Petersen Mfg. Co., DeWitt, Nebr.
Trindl Products, Ltd., Chicago, Ill.
Williams & Co., J. H., Buffalo, N. Y.

CLEANERS, AIR, ELECTRICAL

See Filters, Air, Electrostatic (with outside power source)

CLEANERS, PIPE LINE, ELECTRICALLY DRIVEN

Ken-Way Corp., Sparta, Wis.
Spartan Tool Co., Chicago, Ill.

CLEANERS, TUBE

Airetool Mfg. Co., Springfield, O.
Arcee Products, Pawtucket, R. I. (copper fitting cleaning tool)
Bate Soot Blower Div., General Blower Co., Inc., Philadelphia, Pa.
Boiler Equipment Trust, Amherst, Mass.
Chesterton Co., A. W., Everett, Mass.
Condenser Service & Engineering Co., Inc., Hoboken, N. J.
Dowell Div. of The Dow Chemical Co., Tulsa, Okla.
Elliott Co., Jeannette, Pa.
Hastings Air Control, Inc., Omaha, Nebr.
Mill-Rose Co., Cleveland, O.
Oakite Products, Inc., New York, N. Y.
Osborn Mfg. Co., Cleveland, O.
Pierce Co., Wm. B., The, Buffalo, N. Y.
Pilley Brush Co., Fort Madison, Ia.
Viking Research Corp., Sheboygan, Wis.
Wilson, Inc., Thomas C., Long Island City.

CLEANERS, VACUUM, FOR BOILERS

Ace Sycamore, Inc., Sycamore, Ill.
Black & Decker Mfg. Co., The, Towson, Md.
Doyle Vacuum Cleaner Co., Grand Rapids, Mich.
Empire Chemical Products Co., Newark, N. J.
Holub Industries, Inc., Sycamore, Ill.
Ideal Industries, Inc., Sycamore, Ill.
Kent Co., Inc., Rome, N. Y.
Kleen-Air Mfg. Co., Jamesville, Wis.
National Super Service Co., The, Toledo, O.
Premier Co., St. Paul, Minn.
Pullman Vacuum Cleaner Co., Boston, Mass.
Spencer Turbine Co., Hartford, Conn.
Truco Masonry Drilling Div., Wheel Trueing Tool Co., Detroit, Mich.

CLEANING COMPOUNDS

See Compounds, Cleaning, Pipe Coil and Condenser

CLEANING COMPOUNDS, AIR FILTER

See Compounds, Cleaning, Air Filter

CLEANING MACHINES, PIPE

See Machines, Pipe Cleaning; Cleaners, Pipe Line, Electrically Driven; Rams, Water, for Cleaning Out Pipe Lines

CLOSURES FOR PROTECTING PIPE AND TUBE FITTINGS

See Plugs, Caps and Closures for Protecting Pipe and Tube Fittings

CLOTH, TREATED, FOR DUST COLLECTORS

American Felt Co., Glenville, Conn.
Bemis Bro. Bag Co., St. Louis, Mo.
Blossom Mfg. Co., Inc., Brooklyn, N. Y.
Canvas Products Co., St. Louis, Mo.
Day Co., The, Minneapolis, Minn.
Menardi & Co., El Segundo, Calif.
Star Woolen Co., Cohoes, N. Y.

CLUTCHES, HYDRAULIC

See Drives, Fluid or Hydraulic, for Power Transmission

COAL BURNERS

See Burners, Pulverized Coal; Stokers

COAL CONVEYORS

See Conveyors, Coal and Ash

COATINGS, PROTECTIVE, FOR METALS

Acme-Fisher Div., Broadway Rubber Corp., Louisville, Ky.
Allied Porcenell, Inc., Chicago, Ill. (vitreous enamel coatings)
Amchem Products, Inc., Ambler, Pa. (rust proofing chemicals)
Amercoat Corporation, South Gate, Calif. (epoxy, zinc, vinyl)
American Hard Rubber Co., Div of Amerace Corp., Butler, N. J. (rubber and plastic)
American Solder & Flux Co., Philadelphia, Pa. (Galvanizing powder)
Anderson-Prichard Oil Co., Oklahoma City, Okla.
Angier Adhesives, Div. of Interchemical Corp., Cambridge, Mass.
Arco Co., The, Cleveland, O. (heavy)
Armstrong Cork Co., Lancaster, Pa. (asphalt for weather & low temperatures)
Atlas Mineral Products Co., Mertztown, Pa. (plastic)
Automotive Rubber Co., Inc., Detroit, Mich. (rubber)
Barreled Sunlight Paint Co., Providence, R. I.
Barrett Div., Allied Chemical & Dye Corp., New York, N. Y. (Pitchbase and asphaltbase)
Bart Mfg. Corp., Belleville, N. J.
Blue Ridge Talc Co., Inc., Henry, Va.
Borden Co., The, Chemical Div., Coatings & Adhesives Div., Middlesex, N. J.
Brooklyn Paint & Varnish Co., Inc., Brooklyn, N. Y.
Cabot Inc., Samuel, Boston, Mass. (Bituminous black paint)
Calbar Paint & Varnish Co., Philadelphia, Pa.
Carboline Co., The, St. Louis, Mo. (corrosion resisting)
Carey Mfg. Co., Philip, Lockland, Cincinnati, O. (Asphalt and aluminum paints for roofs)
Ceilcote, Inc., Cleveland, O. (resin)
Chem Industrial Co., Brooklyn, O. (anti-rust paint)
Chemical Coatings & Engineering Co., Media, Pa.
Chemical Solvent Co., Birmingham, Ala. (liquid)
Chicago Gasket Co., Chicago, Ill.
Condenser Service & Engineering Co., Inc., Hoboken, N. J. (Metal spray)
Constad Laboratories, Jamaica, N. Y. (anti-rust paint)
Continental Products Co., Euclid, O. (paint)
Cordo Chemical Corp., Norwalk, Conn.
Corite Products, Inc., Chicago, Ill. (plastic)
Corrosion Control Co., Inc., New York, N. Y.
Corrosite Div., Reliance Paint Co., Brooklyn, N. Y. (vinyl plastic)
Corro-Vent, Inc., Cincinnati, O. (plastic)
Dampney Co., Boston, Mass.
Dearborn Chemical Co., Chicago, Ill. (Rust preventive)
Debevoise Co., The, Brooklyn, N. Y.
Dennis Chemical Co., St. Louis, Mo.
Devices, Inc., A Div. of Miracle Adhesives Corp., Bellmore, N. Y. (polyvinyl "Zip-on" covering)
Dixon Crucible Co., Joseph, Jersey City, N. J.
Dow Corning Corp., Midland, Mich.
du Pont de Nemours & Co., E. I., Finishes Div., Wilmington, Del.
Eagle-Picher Co., Cincinnati, O.
Ellicott Fabricators, Inc., Baltimore, Md.
Elraco Engineering Co., Los Angeles, Calif. (interior tank paint)
Emjay Maintenance Engineers, Rutherford, N. J.
Ervite Corp., Erie, Pa. (porcelain enamel)
Flexrock Co., Philadelphia, Pa.
Flintkote Co., The, New York, N. Y. (Asphalt emulsions)
Flood Co., Hudson, O. (paint additive)
Foster Co., Benjamin, Philadelphia, Pa. (vinyl)
France Refractories, Co., J. H., Snow Shoe, Pa. (cast iron & steel)
Garlock Packing Co., Palmyra, N. Y. (cementable teflon)
Gates Engineering Co., Wilmington, Del.

Gibson-Homans Co., Cleveland, O.
Glidden Co., The, Cleveland, O. (alkyds; vinyls; epoxys)
Goodall Rubber Co., Trenton, N. J. (liquid Neoprane)
Goodrich Industrial Products Co., B. F., Akron, O. (rubber)
Guard Coatings Corp., Long Island City, N. Y.
Hague & Co., Inc., Alfred, Div. of Lacquer & Chemical Corp., Brooklyn, N. Y.
Harco Corp., Cathodic Protection Div., Cleveland, O. (corrosion protection for underground piping, process tanks, storage tanks, and radiant heating piping)
Heresite & Chemical Co., Manitowoc, Wis. (Synthetic rubber, pure phenolic coating, baking type)
Hill, Hubbell & Co., Cleveland, O. (coating and wrapping for steel pipe)
Horn Companies, A. C., Subsidiary of Sun Chemical Corp., New York, N. Y.
Houghton & Co., E. F., Philadelphia, Pa.
Industrial Finishes Co., Inc., Philadelphia, Pa.
Industrial Metal Protectives, Inc., Dayton, O.
Industrial Plastic Fabricators, Norwood, Mass. (PVC)
Insul-Coustic, Inc., Maspeth, Long Island, N. Y.
Insul-Mastic Corp. of America, Summit, Ill. (asphaltic & plastic)
Interchemical Corp., Finishes Div., Newark, N. J.
Johnson Mfg. Co., Inc., Mt. Vernon, Ia.
Kendall Co., Polyken Sales Div., Chicago, Ill. (tape, plastic)
Knapp Mills, Inc., Long Island City, N. Y. (lead ferralum)
Knight, Maurice A., Akron, O. (Vinyl plastic base)
Koppers Co., Inc., Pittsburgh, Pa. (coal tar)
Krylon, Inc., Norristown, Pa.
LaFavorite Rubber Mfg. Co., Hawthorne, N. J. (rubber, PVC, neoprene)
Lithcote Corp., Melrose Park, Ill. (baked phenolic epoxy vinyl neoprene, plastisol and stone linings)
Maas & Waldstein Co., Newark, N. J.
Master Mechanics Co., Cleveland, O.
Metal & Thermit Corp., Rahway, N. J. (plastisol-vinyl phenolic)
Metalweld, Inc., Protective Coatings Div., Philadelphia, Pa. (linings for hot water tanks)
Midland Paint & Varnish Co., Cleveland, O.
Minnesota Mining & Mfg. Co., St. Paul, Minn.
Minnesota Mining & Mfg. Co., Adhesives & Coatings Div., Detroit, Mich. (Sound dampening and insulating types as well as for corrosion protection)
Mono-Seal Products, Everett, Mass.
Moore & Co., Samuel, Mantau, O. (plastic)
Moran Paint Co., Xenia, O.
Mortell Co., J. W., Kankakee, Ill. (Asphalt)
National Asphalt Corp., Cleveland, O.
National Lead Co., New York, N. Y. (Red lead)
Navan Products Inc., Los Angeles, Calif.
Nazar Rubber Co., Toledo, O. (rubber)
Nebel Mfg. Co., Cleveland, O.
Neilson Chemical Co., Detroit, Mich.
Nelson Mfg. Co., B. F., Minneapolis, Minn.
Oakite Products, Inc., New York, N. Y. (phosphate, chromate)
Octagon Process, Inc., Staten Island, N. Y. (rust preventive oils, rust-proofing compounds)
Ohmlac Paint & Refining Co., Inc., Long Island City, N. Y. (Acid resistant, heat resistant)
Patterson-Kelley Co., Inc., The, East Stroudsburg, Pa. (cement)
Penn Galvanizing Co., Philadelphia, Pa. (Galvanizing)
Pennsalt Chemicals Corp., Philadelphia, Pa. **(chlorinated hydrocarbon base, and liquid neoprene base)**
Peters Co., The, Div. of Toledo Paint & Chemical Co., Toledo, O.
Pipeline Coatings & Engineering Co., Los Angeles, Calif.
Pittsburgh Coke & Chemical Co., Pittsburgh, Pa.
Pittsburgh Plate Glass Co., Pittsburgh, Pa. (Paint, varnish, lacquer)
Plicoflex, Inc., Los Angeles, Calif. (plastic)
Poe Co., C. W., The, Cleveland, O.
Polymer Corp., The, Reading, Pa. (plastic fusion bond finishes)
Porce-Lin Tank Lining Co., Detroit, Mich.
Presstite-Keystone Engineering Products Co., A Div. of American-Marietta Co., St. Louis.
Pyrolite Products Co., Cleveland, O.
Quelcor, Inc., Chester, Pa. (plastic)
Quigley Co., Inc., New York, N. Y.
Reilly Tar & Chemical Corp., Indianapolis, Ind. (Coal tar base)
Rhopac, Inc., Skokie, Ill. (pipe insulation)
Robertson Co., H. H., Pittsburgh, Pa. (polyester resin)
Rotometals, San Francisco, Calif. (galvanizing repair stick)
Rubber & Plastics Compound Co., New York, N. Y. (anticorrosive coating)
Rusticide Products Co., Cleveland, O.
Rust-Oleum Corp., Evanston, Ill.
Saran Lined Pipe Co., Ferndale, Mich.
Saverite Engineering Co., Hoboken, N. J. (Tank coatings, rust preventive)
Sealed Unit Parts Co., Inc., New York, N. Y. (liquid)
Sheldon & Co., Inc., M. L., New York, N. Y.
Sherwin-Williams Co., The, Cleveland, O.
Shutt Process Equipment Corp., St. Louis.
Solar Aircraft Co., San Diego, Calif. (ceramic)
Solfo Paint Mfg. Co., Trenton, N. J.
Sonneborn Sons, Inc., L., Building Products Div., New York, N. Y.
Southern Pipe & Casting Co., Div. of U.S. Industries, Inc., Azusa, Calif.
Southport Paint Co., Div. Wesson Oil & Snowdrift Co., Inc., Savannah, Ga. (Metallic paint)
Special Chemicals Corp., Ossining, N. Y. (Aluminum paint)
Speco, Inc., Cleveland, O.
Standard Oil Co. of California, San Francisco, Calif.
Starline Co., Dayton, O.
Steelcote Mfg. Co., St. Louis, Mo.
Surface Chemicals, Inc., McKees Rocks, Pa. (plastic)
Tapecoat Co., The, Evanston, Ill. (coal tar protective coating in tape form, for pipe, and pipe joints, pipe fittings, insulated pipe, both underground and above ground)
Thompson and Co., Oakmont, Pa.
Tropical Paint Co., Cleveland, O. (priming paint for iron & zinc)
Truscon Laboratories Div., Devoe & Raynolds Co., Inc., Detroit, Mich. (alkyd and epoxy resin)
Turco Products, Inc., Los Angeles, Calif.
United States Gasket Co., Camden, N. J. (fluorocarbon plastics)
United States Rubber Co., New York, N. Y. (rubber plastic, liquid plastic)
United States Stoneware Co., New York, N. Y. (Corrosion resistant)
United States Stoneware Co., Plastics & Synthetics Div., Akron, O. (vinyls)
Vimasco Corp., Nitro, W. Va. (vinyl)
Watson-Standard Co., Pittsburgh, Pa.
Wilbur & Williams Co., Brighton, Mass.
Wilhelm Co., A., Reading, Pa.
Wolfe-Kote Co., Inc., Sheboygan, Wis.
X-Pando Corp., Long Island City, N. Y. (epoxy)

COCKS, BOILER GAGE

Bordo Co., Inc., L. J., Glenside, Pa.
Crane Co., Chicago, Ill.
Ernst Water Column & Gauge Co., Livingston, N. J.
Huyette Co., Inc., Paul B., Philadelphia, Pa.
Keckley Co., O. C., Skokie, Ill.
Longergan Co., J. E., Philadelphia, Pa.
Lunkenheimer Co., Cincinnati, O.
Manning, Maxwell & Moore, Inc., Stratford, Conn.
Marsh Instrument Co., Skokie, Ill.
Penberthy Mfg. Co., Div. of Buffalo Eclipse Corp., Detroit, Mich.
Powell Co., Wm., The, Cincinnati, O.
Reliance Gauge Column Co., Cleveland, O.
Shank Co., Cyrus, Chicago, Ill.
Strahman Valves, Inc., New York, N. Y.
Swift Lubricator Co., The, Elmira, N. Y.
Williams Gauge Co., Inc., The, Pittsburgh, Pa.

COILS, CONDENSATION

Adsco Div., Yuba Consolidated Industries, Inc., Buffalo, N. Y.
Buxton Mfg. Co., Dover, N. J.
Dean Thermo-Panel Coil Div., Dean Products, Inc., Brooklyn, N. Y.
Dunham-Bush, Inc., West Hartford, Conn.
General Ceramics Corp., Keasbey, N. J. (ceramic and plastic)
General Fittings Co., East Greenwich, R. I.
Heatron, Inc., York, Pa.
Lewis & Saunders, Lakeport, N. H.
Old Dominion Iron & Steel Corp., Richmond, Va.
Roessing Mfg. Co., Pittsburgh, Pa.
Rome-Turney Radiator Co., Rome, N. Y.
Star Tubular Products Co., Chicago, Ill.
Trane Co., The, La Crosse, Wis.
Vilter Mfg. Co., The, Milwaukee, Wis.
Young Radiator Co., Racine, Wis.
Yula Corp., Bronx, N. Y.

COILS, FINNED

See Surface, Finned, Cooling; Surface, Finned, Heating

COILS, FOR HOT WATER STORAGE TANKS

Adams Co., The, Dubuque, Ia.
Adsco Div., Yuba Consolidated Industries, Inc., Buffalo, N. Y.
Alstrom Corp., New York, N. Y.
American Cooling Tower Co., Kansas City, Mo.
American Tube Products, Inc., West Warwick, R. I.
Bell & Gossett Co., Morton Grove, Ill.
Bernstrom, Inc., C. R., Providence, R. I.
Buxton Mfg. Co., Dover, N. J.
Condenser Service & Engineering Co., Inc., Hoboken, N. J.
Davis Engineering Corp., Elizabeth, N. J.
Dean Thermo-Panel Coil Div., Dean Products, Inc., Brooklyn, N. Y.
Dormont Mfg. Co., Pittsburgh, Pa.
Ellicott Fabricators, Inc., Baltimore, Md.
Federal Boiler Co., Inc., Midland Park, N. J.
General Fittings Co., East Greenwich, R. I.
Kewanee Boiler Div., American-Standard, Kewanee, Ill.
Killebrew Engineering Corp., St. Louis, Mo.
Lewis & Saunders, Lakeport, N. H.
Lindy Heaters, Inc., New York, N. Y.
Manning & Lewis Engineering Co., Newark, N. J.
Mar-Coil Heater Co., Union, N. J.
National Pipe Bending Co., New Haven, Conn.
Old Dominion Iron & Steel Corp., Richmond, Va.
Pittsburgh Nipple Wks., Inc., Pittsburgh, Pa.
Pittsburgh Pipe Coil & Bending Co., Etna, Pittsburgh, Pa.
Quaker City Iron Wks., Philadelphia, Pa.
Queen City Engineering Co., Charlotte, N. C.
Rempe Co., Chicago, Ill.
Republic Products Co., Philadelphia, Pa.
Richmond Engineering Co., Richmond, Va.
Roessing Mfg. Co., Pittsburgh, Pa.
Rome-Turney Radiator Co., Rome, N. Y.
Sales & Co., Murray W., Detroit, Mich.
Sawhill Tubular Products, Inc., Sharon, Pa.
Sims Co., Erie, Pa.
Star Tubular Products Co., Chicago, Ill.
Taco Heaters, Inc., Cranston, R. I.
Tranter Mfg., Inc., Lansing, Mich.
Western Piping & Engineering Co., Inc., San Francisco, Calif.
Whitlock Mfg. Co., W. Hartford, Conn.
Yula Corp., Bronx, N. Y.

COILS AND PANELS, RADIANT HEATING AND COOLING, PREFABRICATED

Also see Ceilings, Radiant Heating and Cooling, and Acoustical Control

American Brass Co., Waterbury, Conn.
Atlantic Pipe Bending and Fabricating Corp., Moonachie, N. J.
Burgess-Manning Co., Architectural Products Div., Chicago, Ill. (also for radiant cooling)
Capitol Mfg. & Supply Co., Columbus, O.
Clow & Sons, Inc., James B., Chicago, Ill.
Cobra Pipe Supply & Coil Co., Inc., Elmwood, Conn.
Dean Thermo-Panel Coil Div., Dean Products, Inc., Brooklyn, N. Y.
Dole Refrigerating Co., Chicago, Ill.
Fricke, Fred J., Albuquerque, N. M.
Heat & Power Corp., Baltimore, Md.
Knapp Mills, Inc., Long Island City, N. Y. (lead clad)
Kritzer Radiant Coils, Inc., Batavia, Ill.

Marlo Coil Co., St. Louis, Mo.
Nesbitt, Inc., John J., Philadelphia, Pa.
Olin Mathieson Chemical Corp., Metals Div., East Alton, Ill. (roll bonded metal panels incorporating fluid passages)
Panel Heat, Inc., Copiague, N. Y.
Price Brothers, Dayton, O. (concrete slabs with openings for air travel or for hot water coils)
Radiant Heat and Cooling Co., Santa Clara, Calif.
Radiant Panel Mfg. Co., Torrington, Conn.
Reflectotherm, Inc., Cincinnati, O.
Roessing Mfg. Co., Pittsburgh, Pa.
Sawhill Tubular Products, Inc., Sharon, Pa.
Simplex Ceiling Corp., New York, N. Y.
Taylor Engineering Corp., Detroit, Mich.
Tranter Mfg. Inc., **Lansing**, Mich.
Wallace Supplies Mfg. Co., Chicago, Ill.

COILS, PIPE

Albert Pipe & Supply Co., Inc., Brooklyn, N. Y.
American Cooling Towers Co., Kansas City, Mo.
American Smelting & Refining Co., Federated Metals Div., New York, N. Y. (lead, lead covered and lead alloy)
Atlantic Pipe Bending and Fabricating Corp., Moonachie, N. J.
Blaw Knox Co., Power Piping & Sprinkler Div., Pittsburgh, Pa.
Capitol Mfg. & Supply Co., Columbus, O.
Chicago Nipple Mfg. Co., Oak Park, Ill.
Clow & Sons, Inc., James B., Chicago, Ill.
Cobra Pipe Supply & Coil Co., Inc., Elmwood, Conn.
Crane Co., Chicago, Ill.
Dean Thermo-Panel Coil Div., Dean Products, Inc., Brooklyn, N. Y.
Division Lead Co., Summit, Ill.
Flori Pipe Co., The, St. Louis, Mo.
Frick Co., Waynesboro, Pa.
Grinnell Co., Inc., Providence, R. I.
Harris & Co., Arthur, Chicago, Ill.
Heil Process Equipment Corp., Cleveland, O. (Impervious Graphite)
Howe Ice Machine Co., Chicago, Ill.
Imeco, Inc., Chicago, Ill.
Kopperman & Sons, Inc., Joseph, Philadelphia, Pa.
Lead Lined Iron Pipe Co., Wakefield, Mass. (lead covered)
Lewis & Saunders, Lakeport, N. H.
Marlo Coil Co., St. Louis, Mo.
Marquette Coppersmithing Co., Philadelphia, Pa.
Midwest Piping Co., Inc., St. Louis, Mo.
Mitchell & Co., Inc., W. K., Philadelphia, Pa.
Mueller Brass Co., Port Huron, Mich.
National Pipe Bending Co., New Haven, Conn.
Niagara Blower Co., New York, N. Y.
Ohio Pipe Bending & Machine Co., Cleveland, O.
Old Dominion Iron & Steel Corp., Richmond, Va.
Philadelphia Pipe Bending Co., Philadelphia.
Pittsburgh Pipe Coil & Bending Co., Etna, Pittsburgh, Pa.
Reco Products Div., Recony Corp., New York, N. Y.
Refrigeration Appliances, Inc., Chicago, Ill.
Rempe Co., Chicago, Ill.
Roessing Mfg. Co., Pittsburgh, Pa.
Sales & Co., Murray W., Detroit, Mich.
Sawhill Tubular Products, Inc., Sharon, Pa.
Semet-Solvay Engineering Div., Allied Chemical Corp., New York, N. Y.
Shaw-Kendall Engineering Co., Toledo, O.
Star Tubular Products Co., Chicago, Ill.
Taylor Engineering Corp., Detroit, Mich.
Tranter Mfg., Inc., Lansing, Mich.
Valley Foundry & Machine Works, Inc., Fresno, Calif.
Vilter Mfg. Co., The, Milwaukee, Wis.
Vogt Machine Co., Henry, Louisville, Ky.
Wallace Supplies Mfg. Co., Chicago, Ill.
Western Piping & Engineering Co., Inc., San Francisco, Calif.
Whitlock Mfg. Co., W. Hartford, Conn.
York Corp., Subsidiary of Borg-Warner Corp., York, Pa.

COLLECTION, DUST AND FUME, ULTRASONIC

Advance Industries, Inc., Cambridge, Mass.
Narda Ultrasonics Corp., Westbury, Long Island, N. Y.

COLLECTORS, DUST

Aerotec Corp., The, Greenwich, Conn. (mechanical and electrical)
Aget Mfg. Co., Adrian, Mich. (cyclone; cloth-filter types)
Allington & Curtis Mfg. Co., Saginaw, Mich (centrifugal & bag)
American Air Filter Co., Inc., Louisville, Ky.
American Blow Pipe Co., Chicago, Ill. (shavings and sawdust, wet and dry type, buffing and polishing)
American Blower Div. of American-Standard, Detroit, Mich.
Baker Co., Inc., The, Biddeford, Me. (portable)
Banister Co., Inc., Cambridge, Mass. (centrifugal-dry and wet)
Blower Application Co., Milwaukee, Wis. (cyclone)
Bubar Dust Systems, Old Lyme, Conn. (mechanical)
Buell Engineering Co., Inc., New York, N. Y.
Buffalo Forge Co., Buffalo, N. Y. (wet & dry)
Carolina Blower Co., Inc., Greensboro, N. C. (cyclone)
Centri-Spray Corp., Livonia, Mich. (Wet type)
Cincinnati Electrical Tool Co., The, Cincinnati, O. (self contained)
Day Co., The, Minneapolis, Minn. (cyclones & filters)
DeVilbiss Co., The, Toledo, O.
DeVilbiss Metal Fabricators Co., Detroit, Mich.
Ducon Co., Inc., The, Mineola, N. Y. (Cyclone, centrifugal wash, and bag type)
Dust Filter Co., Chicago, Ill. (wet)
Dust Suppression & Engineering Co., Lake Orion, Mich.
Dustender Co., Ann Arbor, Mich.
Dustex Corp., Buffalo, N. Y. (mechanical)
Empire Chemical Products Co., Newark, N. J.
Farr Co., Los Angeles, Calif. (cyclonic)
Fluor Products Co., Whittier, Calif. (cyclone — wet & dry types)
Ft. Worth Steel & Machinery Co., Ft. Worth, Tex.
Goethel Sheet Metal Wks., Inc., Alfred, Milwaukee, Wis.
Green Fuel Economizer Co., Inc., The, Beacon, N. Y. (dry type)
Griffin & Co., Inc., Louisville, Ky. (cyclone)
Hammond Machinery Builders, Inc., Kalamazoo, Mich.
Johnson March Corp., Philadelphia, Pa.
Joy Mfg. Co., Pittsburgh, Pa. (wet impingement)
Kice Metal Products Co., Wichita, Kans. (cyclone type)
Kirk & Blum Mfg. Co., Cincinnati, O.
Koppers Co., Inc., Pittsburgh, Pa. (mechanical)
Koppers Company, Inc., Metal Products Div., Baltimore, Md. (electrostatic)
Lumm Co., A. H., Toledo, O.
Mahon Co., R. C., The, Detroit, Mich. (dry inertia, air washers, fog filters)
Majac, Inc., Pittsburgh, Pa. (power driven)
National Dust Collector Corp., Chicago, Ill. (wet type)
Newcomb-Detroit Co., Detroit, Mich. (recirculating spray tube)
Northern Blower Co., Cleveland, O.
Omega Div., B-I-F Industries, Inc., Providence, R. I. (bag type)
Pangborn Corp., Hagerstown, Md. (cloth filter and wet type)
Peabody Engineering Corp., New York, N. Y. (wet)
Prat-Daniel Corp., Thermobloc Div., South Norwalk, Conn.
Puhl & Hepper Mfg. Co., Inc., St. Louis, Mo.
Pulverizing Machinery Div., Metals Disintegrating Co., Inc., Summit, N. J. (filter bag)
Research-Cottrell, Inc., Bound Brook, N. J. (electrostatic & mechanical)
Ruemelin Mfg. Co., Milwaukee, Wis. (cloth bag type)
St. Louis Blow Pipe & Heater Co., Div. of Young Sales Corp., St. Louis, Mo.
Schmieg Industries, Inc., Detroit, Mich. (wet type)
Schneible Co., Claude B., Detroit, Mich. (wet type)
Shutt Process Equipment Co., St. Louis, Mo.
Sly Mfg. Co., W. W., Cleveland, O. (cloth bag type)
Spencer Turbine Co., Hartford, Conn.
Sprout-Waldron & Co., Inc., Muncy, Pa.
Torit Mfg. Co., St. Paul, Minn. (cloth filter and centrifugal separator)
United Sheet Metal Co., Inc., Columbus, O. (cyclone)
Universal Gear & Machine Co., Detroit, Mich. (for portable industrial applications)
Vacu-Blast Co., Inc., Belmont, Calif. (wet type)
Wagner Awning & Mfg. Co., Cleveland, O. (Dust recovery bags)
Western Blower Co., Seattle, Wash.
Western Precipitation Corp., Los Angeles, Calif.
Wheelabrator Corp., Mishawaka, Ind. (cloth tube and wet types)
Winkler & Sons, Inc., A. E., Milwaukee, Wis. (cyclone)
Young & Bertke Co., Cincinnati, O. (cyclone type)
Zack Co., The, Chicago, Ill.

COLORIMETERS

American Instrument Co., Inc., Silver Spring, Md.
Bausch & Lomb Optical Co., Rochester, N. Y.
Ellison Draft Gage Co., Chicago, Ill.
General Electric Co., Apparatus Sales Div., Schenectady, N. Y.
Manufacturers Engineering & Equipment Corp., Hatboro, Pa.
Will Corp., Rochester, N. Y.

COMBUSTION CHAMBERS

See Chambers, Combustion, Preformed

COMBUSTION CONTROL

See Controls, Draft, Barometric; Regulators, Draft, Combustion; Systems, Combustion Control

COMBUSTION RECORDERS

See Recorders, Carbon Dioxide

COMBUSTION TESTING KITS

See Kits, Combustion Testing; Analyzers, Carbon Dioxide, Portable; Indicators, Smoke; Testers, Smoke

COMPOUNDS, AIR FRESHENING

Acme Chemical Co., Milwaukee, Wis.
Aireactor Corp., New York, N. Y.
Airkem, Inc., New York, N. Y.
Ampion Corp., Long Island City, N. Y.
Barnebey-Cheney Co., Columbus, O.
Easton R. S. Corp., Brooklyn, N. Y.
Lord & Clark Co., Inc., Boston, Mass.
S. O. S. Products Co., Inc., Brooklyn, N. Y.

COMPOUNDS, ANTI-FREEZE, FOR SNOW MELTING COILS

Commercial Solvents Corp., New York, N. Y.
Dow Chemical Co., The, Midland, Mich.
Olin Mathieson Chemical Corp., Chemicals Div., Baltimore, Md.
Socony-Mobil Oil Co., Inc., New York, N. Y.
Union Carbide Chemicals Co., Div. of Union Carbide Corp., New York, N. Y.

COMPOUNDS, BOILER CLEANING

Agava Products, Inc., Jersey City, N. J.
Agnew & Tomlinson, Long Island City, N. Y.
American K. A. T. Corp., Subsidiary of Magnus Chemical Co., Inc., Garwood, N. J.
American Sand-Banum Co., Inc., Merrick, N. Y.
Ampion Corp., Long Island City, N. Y.
Anderson Chemical Co., Inc., Macon, Ga.
Anderson-Stolz Corp., Kansas City, Mo.
Aquatrol Laboratories, Inc., Clifton, N. J.
Bird-Archer Co., Philadelphia, Pa.
Black & White Chemical Co., New York, N. Y.
Blue Seal Chemical Co., Roselle Park, N. J.
Calgon Co., Pittsburgh, Pa.
Cannon Chemical Co., Inc., Cambridge, Mass.
Chemical Solvent Co., Birmingham, Ala.
Clayton Mfg. Co., El Monte, Calif.
Continental Products Co., Euclid, O.
Dearborn Chemical Co., Chicago, Ill.

Dowell Div. of The Dow Chemical Co., Tulsa, Okla.
Drew & Co., Inc., E. F., New York, N. Y.
duPont de Nemours & Co., E. I., Grasselli Chemicals Dept., Wilmington, Del.
Elraco Engineering Co., Los Angeles, Calif.
Empire Chemical Products Co., Newark, N. J.
Hagan Chemicals & Controls, Inc., Pittsburgh, Pa.
Hercules Chemical Co., Inc., New York, N. Y.
Houghton & Co., E. F., Philadelphia, Pa.
Kenite Laboratory, Madison, N. J.
Kewanee-Ross Corp., Kewanee, Ill.
Kisco Boiler & Engineering Co., St. Louis, Mo.
Lindy Heaters, Inc., New York, N. Y.
Magnus Chemical Co., Garwood, N. J.
McMillan Industrial Supplies, C. C., Portland, Ore.
Metropolitan Refining Co., Inc., Long Island City, N. Y.
Moreheat Distribution, Inc., Cincinnati, O.
North American Mogul Products Co., The, Cleveland, O.
Oakite Products, Inc., New York, N. Y.
Octagon Process, Inc., Staten Island, N. Y.
Pennsalt Chemicals Corp., Philadelphia, Pa.
Permutit Co., Div. of Pfaudler Permutit, Inc., New York, N. Y.
Perolin Co., Inc., New York, N. Y.
Radiator Specialty Co., Charlotte, N. C.
S. O. S. Products Co., Inc., Brooklyn, N. Y.
Saverite Engineering Co., Hoboken, N. J.
Sealed Unit Parts Co., Inc., New York, N. Y.
Smith Chemical Co., E. W., La Puente, Calif.
Squires Co., C. E., The, Cleveland, O.
Stewart-Hall Chemical Corp., Mt. Vernon, N. Y.
Strong, Carlisle & Hammond, Cleveland, O.
Sudbury Laboratory, South Sudbury, Mass.
Sulflo, Inc., Elizabeth, N. J.
Turco Products, Inc., Los Angeles, Calif.
Union Carbide Chemicals Co., Div. of Union Carbide Corp., New York, N. Y.
Warren Refining & Chemical Co., The, Cleveland, O.
Water Service Laboratories, Inc., New York, N. Y.
Water Treatment Co. of America, Pittsburgh, Pa.
X Laboratories, Inc., New York, N. Y.

COMPOUNDS, BOILER AND RADIATOR SEALING

Ampion Corp., Long Island City, N. Y.
Arco Co., The, Cleveland, O.
Black & White Chemical Co., New York, N. Y.
Blue Seal Chemical Co., Roselle Park, N. J.
Cannon Chemical Co., Inc., Cambridge, Mass
Chemical Solvent Co., Birmingham, Ala.
Eagle-Picher Co., Cincinnati, O.
Hampton-Cross Co., The, Louisville, Ky.
Hercules Chemical Co., Inc., New York.
Johns-Manville, New York, N. Y.
Kenite Laboratory, Madison, N. J.
Metropolitan Refining Co., Inc., Long Island City, N. Y.
Quigley Co., Inc., New York, N. Y.
Radiator Specialty Co., Charlotte, N. C.
Refractory & Insulation Corp., New York N. Y.
S. O. S. Products Co., Inc., Brooklyn, N. Y.
Smith Chemical Co., E. W., La Puente, Calif.
Stewart-Hall Chemical Corp., Mt. Vernon, N. Y.
Sulflo, Inc., Elizabeth, N. J.
X Laboratories, Inc., New York, N. Y.

COMPOUNDS, CAULKING AND SEALING

Arco Co., The, Cleveland, O.
Babbitt Chemical Co., Inc., New Bedford, Mass.
Calbar Paint & Varnish Co., Philadelphia, Pa.
Corrosion Control Co., Inc., New York, N. Y.
Dow Corning Corp., Midland, Mich.
Gates Engineering Co., Wilmington, Del.
Johns-Manville, New York, N. Y.
Midland Paint & Varnish Co., Cleveland, O.
Mortell Co., J. W., Kankakee, Ill.
Nebel Mfg. Co., Cleveland, O.
Pecora Inc., Philadelphia, Pa.
Plastic Products Co., Detroit, Mich.
Products Research Co., Los Angeles, Calif.
Smooth-On Mfg. Co., Jersey City, N. J.
Sonneborn Sons, Inc., L., Building Products Div., New York, N. Y.
X-Pando Corp., Long Island City, N. J.

COMPOUNDS, CLEANING, AIR FILTER

Airkem, Inc., New York, N. Y.
Dollinger Corp., Rochester, N. Y.
Homestead Valve Mfg. Co. Coraopolis, Pa.
Magnus Chemical Co., Garwood, N. J.
Montgomery Chemical Co., Jenkintown, Pa.
National Aniline Div., Allied Chemical Corp., New York, N. Y.
Oakite Products, Inc., New York, N. Y.
Pennsalt Chemicals Corp., Philadelphia, Pa.
Perolin Co., Inc., The, New York, N. Y.
Peters Co., The, Div. of Toledo Paint & Chemical Co., Toledo, O.
Sonneborn Sons, Inc., L., Building Products Div., New York, N. Y.
Trion, Inc., McKees Rocks, Pa.
Turco Products, Inc., Los Angeles, Calif.
Union Carbide Chemicals Co., Div. of Union Carbide Corp., New York, N. Y.

COMPOUNDS, CLEANING, PIPE COIL AND CONDENSER

Acme Chemical Co., Milwaukee, Wis.
Agava Products, Inc., Jersey City, N. J.
Airkem, Inc., New York, N. Y.
Amchem Products, Inc., Ambler, Pa.
American Sand-Banum Co., Inc., Merrick, N. Y.
Anderson Chemical Co., Inc., Macon, Ga.
Anderson-Stolz Corp., Kansas City, Mo.
Aquatrol Laboratories, Inc., Clifton, N. J.
Bird-Archer Co., Philadelphia, Pa.
Blue Seal Chemical Co., Roselle Park, N. J.
Calgon Co., Pittsburgh, Pa.
Cannon Chemical Co., Inc., Cambridge, Mass.
Carolina Aniline & Extract Co., Inc., Charlotte, N. C.
Chemical Solvent Co., Birmingham, Ala.
Dearborn Chemical Co., Chicago, Ill.
Dowell Div. of The Dow Chemical Co., Tulsa, Okla.
du Pont de Nemours & Co., Inc., E. I., Grasselli Chemicals Dept., Wilmington, Del.
Elraco Engineering Co., Los Angeles, Calif.
Garman Co., Inc., The, St. Louis, Mo. (also for pumps, condensers, etc.)
Hercules Chemicals Co., Inc., New York, N. Y.
Homestead Valve Mfg. Co., Coraopolis, Pa.
Krylon, Inc., Norristown, Pa.
Magnus Chemical Co., Garwood, N. J.
Metropolitan Refining Co., Inc., Long Island City, N. Y.
North American Mogul Products Co., The, Cleveland, O.
Oakite Products, Inc., New York, N. Y.
Octagon Process, Inc., Staten Island, N. Y.
Park-Hill Chemical Corp., Mt. Vernon, N. Y.
Pennsalt Chemicals Corp., Philadelphia, Pa.
Perolin Co., Inc., New York, N. Y.
Petroleum Solvents Corp., New York, N. Y.
Radiator Specialty Co., Charlotte, N. C.
S. O. S. Products Co., Inc., Brooklyn, N. Y.
Smith Chemical Co., E. W., La Puente, Calif.
Stiles Karlsonite Corp., Waukegan, Ill.
Strong, Carlisle & Hammond, Cleveland, O.
Turco Products, Inc., Los Angeles, Calif.
Water Treatment Co. of America, Pittsburgh, Pa.

COMPOUNDS, CLEANING, TANK

Homestead Valve Mfg. Co., Coraopolis, Pa.
National Aniline Div., Allied Chemicals Corp., New York, N. Y.
Neilson Chemical Co., Detroit (Ferndale), Mich.
Oakite Products, Inc., New York, N. Y.
Pennsalt Chemicals Corp., Philadelphia, Pa.
Peters Co., The, Div. of Toledo Paint & Chemical Co., Toledo, O.
Sellers Injector Corp., Philadelphia, Pa. (water driven)
Smith Chemical Co., E. W., La Puente, Calif.
S.O.S. Products Co., Inc., Brooklyn, N. Y.
Sudbury Laboratory, South Sudbury, Mass.

COMPOUNDS, LEAK DETECTING

See Isotopes, Radioactive, for Detecting Leaks in Piping and Heating Systems

COMPOUNDS, WELDING

Allen Co., Inc., L. B., Schiller Park, Ill.
Allied Weld-Craft, Inc., Indianapolis, Ind.
All-State Welding Alloys Co., Inc., White Plains, N. Y.
Aluminum Co. of America, Pittsburgh, Pa.
American Solder & Flux Co., Philadelphia, Pa.
Atlas Welding Accessories Inc., Ferndale, Mich.
Eutectic Welding Alloys Corp., Flushing, N. Y.
Johnson Mfg. Co., Inc., Mt. Vernon, Ia.
Marquette Mfg. Co., Inc., Minneapolis, Minn.
Metal & Thermit Corp., Rahway, N. J.
Midland Paint & Varnish Co., Cleveland, O.
Mir-O-Col Alloy Co., Inc., Los Angeles, Calif.
Modern Engineering Co., St. Louis, Mo.
Presstite-Keystone Engineering Products Co., A Div. of American-Marietta Co., St. Louis, Mo.
Sight Feed Generator Co., West Alexandria, O.
Solar Aircraft Co., San Diego, Calif.
Special Chemicals Corp., Ossining, N. Y.
Stainless Processing Div., Wall Colmonoy Corp., Detroit, Mich.
Thompson and Co., Oakmont, Pa.
Turco Products, Inc., Los Angeles, Calif.
Victor Equipment Co., Welding Equipment Div., San Francisco, Calif.
Weldit, Inc., Detroit, Mich.
Wolfe-Kote Co., Inc., Sheboygan, Wis.

COMPRESSED AIR DEHUMIDIFIERS

See Dehumidifiers for Compressed Air

COMPRESSED AIR MOTORS

See Motors, Compressed Air Powered

COMPRESSION PIPE FITTINGS

See Fittings, Pipe, Compression

COMPRESSOR BASES

See Bases, Vibration Isolating Pad Type; Bases, Vibration Isolating, Spring Type

COMPRESSOR PARTS

See Parts, Air Compressors; Parts, Refrigerating Compressors

COMPRESSOR SEALS

See Seals, Terminal, for Compressors

COMPRESSORS, AIR

Allis-Chalmers Mfg. Co., Milwaukee, Wis.
American Blower Div. of American-Standard, Detroit, Mich.
Atlas Copco Eastern, Inc., Paramus, N. J.
Beach-Russ Co., New York, N. Y.
Binks Mfg. Co., Chicago, Ill.
Black Mfg. Co., Baltimore, Md.
Brunner Div. of Dunham-Bush, Inc., West Hartford, Conn.
Bury Compressor Co., Erie, Pa.
Carrier Corp., Syracuse, N. Y.
Champion Pneumatic Machinery Co., Princeton, Ill.
Chicago Pneumatic Tool Co., New York, N. Y.
Clark-Cooper Co., C C Pump Div., Palmyra, N. J.
Cooper-Bessemer Corp., Mt. Vernon, O.
Curtis Mfg. Co., Refrigeration Div., St. Louis
Davey Compressor Co., Kent, O.
Dayton Electric Mfg. Co., Chicago, Ill.
DeVilbiss Co., The, Toledo, O.
Essick Mfg. Co., Los Angeles, Calif.
Fuller Co., Catasaqua, Pa.
Gardner-Denver Co., Quincy, Ill.
Gray Co., Inc., Minneapolis, Minn.
Haskel Engineering & Supply Co., Glendale, Calif.
Ingersoll-Rand Co., New York, N. Y.
Johnson Service Co., Milwaukee, Wis.
Joy Mfg. Co., Pittsburgh, Pa.
Lammert & Mann Co., Chicago, Ill.
Lee Mfg. Corp., Hialeah, Fla. (portable)
M & E Mfg. Co., Indianapolis, Ind.
Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.
Multiplex Mfg. Co., Berwick, Pa.
Nash Engineering Co., South Norwalk, Conn.
Pennsylvania Pump & Compressor Co., Easton, Pa.
Powers Regulator Co., Skokie, Ill.
Roots-Connersville Blower, Div. of Dresser Industries, Inc., Connersville, Ind.
Schramm, Inc., West Chester, Pa.

Thomas Industries, Inc., Electric Sprayit Div., Sheboygan, Wis.
Valley Foundry & Machine Works, Inc., Fresno, Calif.
Wayne Pump Co., Div. of Symington Wayne Corp., Ft. Wayne, Ind.
Westinghouse Air Brake Co., Industrial Products Div., Wilmerding, Pa.
Wilson Co., K. R., Arcade, N. Y.
Worthington Corp., East Orange, N. J.
Yeomans Bros. Co., Melrose Park, Ill.

COMPRESSORS, REFRIGERATING, CENTRIFUGAL

Airtemp Construction, Div. of Chrysler Corp., Dayton, O., (open and hermetic)
American Blower Div. of American-Standard, Detroit, Mich.
Carrier Corp., Syracuse, N. Y.
Trane Co., The, LaCrosse, Wis.
Worthington Corp., East Orange, N. J. (open & hermetic)
York Corp., Subsidiary of Borg-Warner Corp., York, Pa.

COMPRESSORS, REFRIGERATING, COMBINED WITH CONDENSER, WATER CHILLER, PIPING CONNECTIONS, AND CONTROLS

Acme **Industries, Inc., Jackson, Mich.**
Airtemp Construction, Div. of Chrysler Corp., Dayton, O.
American Radiator & Standard Sanitary Corp., Plumbing & Heating Div., New York, N. Y.
Bell & Gossett Co., Morton Grove, Ill.
Brown Products Corp., Union, N. J.
Brunner Div. of Dunham-Bush, Inc., West Hartford, Conn.
Carrier Corp., Syracuse, N. Y.
Chrysler Airtemp, Div. of Chrysler Corp., Dayton, O.
Circle-Air Industries, Inc., Brooklyn, N. Y.
Cool-Ette, Inc., Detroit, Mich.
Curtis Mfg. Co., Refrigeration Div., St. Louis, Mo.
Dialatemp, Inc., St. Louis, Mo.
Embassy Steel Products, Inc., Brooklyn, N. Y.
Frick Co., Waynesboro, Pa.
General Machine & Mfg. Co., Berwick, Pa.
Heat-X, Inc., Subsidiary of Dunham-Bush, Inc., West Hartford, Conn.
Hydromation Corp., Chicago, Ill.
Kennard Products, American Air Filter Co., Inc., Louisville, Ky.
Lehigh Mfg. Co., Div. of Lehigh, Inc., Easton, Pa.
Mayer Refrigerating Eng., Inc., Lincoln Park, N. J.
National-U. S. Radiator Corp., Johnstown, Pa.
Primor Products, Div. Borg-Warner Corp., Adrian, Mich.
Schnacke, Inc., Evansville, Ind.
Temprite Products Corp., Dept. HPAC, Birmingham, Mich.
Trane Co., The, LaCrosse, Wis.
United States Air Conditioning Corp., Delaware, O. (5 to 150 tons)
Vilter Mfg. Co., The, Milwaukee, Wis.
Westinghouse Electric Corp., Air Conditioning Div., Staunton, Va.
Worthington Corp., East Orange, N. J.
York Corp., Subsidiary of Borg-Warner Corp., York, Pa.

COMPRESSORS, REFRIGERATING, RECIPROCATING

Airtemp Construction, Div. of Chrysler Corp., Dayton, O. (open)
Bendix-Westinghouse Automotive Air Brake Co., Evansville, Ind. (hermetic)
Brunner Co., Subsidiary of Dunham-Bush, Inc., Gainesville, Ga. (semi-hermetic)
Brunner Div. of Dunham-Bush, Inc., West Hartford, Conn. ("Freon" 12 & 22) (open & hermetic)
Carrier Corp., Syracuse, N. Y. (open & hermetic)
Chrysler Airtemp, Div. of Chrysler Corp., Dayton, O. (Radial) (open)
Cooper-Bessemer Corp., The, Mt. Vernon, O. (open)
Copeland Refrigeration Corp., Sidney, O. (open & hermetic)
Curtis Mfg. Co., Refrigeration Div., St. Louis, Mo. (open)
Dersch, Gesswein & Neuert, Inc., Chicago, Ill. (open)
Frick Co., Waynesboro, Pa. (Ammonia, "Freon") (open)
Frigidaire Div., General Motors Corp., Dayton, O. (Semi-hermetic and hermetic)
General Machine & Mfg. Co., Berwick, Pa. (open & hermetic)
Howe Ice Machine Co., Chicago, Ill. (open)
Ingersoll-Rand Co., New York, N. Y. (open)
Kelvinator Div., American Motors Corp., Detroit, Mich. (hermetic)
Kramer Trenton Co., Trenton, N. J.
Lehigh Mfg. Co., Div. of Lehigh Inc., Easton, Pa. (open & hermetic)
Multiplex Mfg. Co., Berwick, Pa. (open)
Onan & Sons Inc., D. W., Minneapolis, Minn. (engine-driven)
Ready-Power Co., The, Detroit, Mich. (refrigeration unit driven by direct-connected internal combustion engine) (hermetic)
Reliance Refrigerating Machine Co., Chicago, Ill. ("Freon," methyl chloride, ammonia) (open)
Schnacke, Inc., Evansville, Ind.
Stewart Ice Machine Co., Pomona, Calif. (open)
Tecumseh Products Co., Tecumseh, Mich. (open and hermetic)
Thermo King Corp., Minneapolis, Minn. (open)
Trane Co., The, LaCrosse, Wis. (hermetic)
Vilter Mfg. Co., Milwaukee, Wis. ("Freon" ammonia) (open)
Westinghouse Electric Corp., Air Conditioning Div., Staunton, Va. (hermetic)
Worthington Corp., East Orange, N. J. (open and hermetic)
York Corp., Subsidiary of Borg-Warner Corp., York, Pa. (Ammonia, freon) (open and hermetic)

COMPRESSORS, REFRIGERATING, STEAM JET

Croll-Reynolds Engrg. Co., Inc., New York, N. Y.
Elliott Co., Jeannette, Pa.
Graham Mfg. Co., Inc., New York, N. Y.
Ingersoll-Rand Co., New York, N. Y.
Schutte and Koerting Co., Cornwells Heights, Bucks County, Pa.
Wheeler Mfg. Co., C. H., Philadelphia, Pa.

COMPRESSORS, STEAM BOOSTER

Bury Compressor Co., Erie, Pa.
Graham Mfg. Co., Inc., New York, N. Y.
Ingersoll-Rand Co., New York, N. Y.
Joy Mfg. Co., Pittsburgh, Pa.
Pennsylvania Pump & Compressor Co., Easton, Pa.
Schutte and Koerting Co., Cornwells Heights, Bucks County, Pa.
Worthington Corp., East Orange, N. J.

CONCRETE, INSULATING, FOR UNDERGROUND PIPING

Dockstader, Inc., S. E., Washington, D. C.
Mearlcrete Div., Mearl Mfg. Corp., Roselle Park, N. J.
Munn and Steele, Inc., South Boston, Mass.
Poe Co., C. W., The, Cleveland, O.
Zonolite Co., Chicago, Ill.

CONDENSATE DISPOSAL UNITS

See Pumps, Condensate, For Removing Condensation From Air Conditioning Units

CONDENSATE RETURN

See Pumps, Condensation Return; Systems, Condensate Return

CONDENSATION METERS

See Meters, Condensation

CONDENSATION PUMPS

See Pumps, Condensation

CONDENSER TUBES

See Tubes, Condenser

CONDENSERS, REFRIGERATING, AIR COOLED

Acme Industries, Inc., Jackson, Mich.
American Coils Co., Farmingdale, N. J. (2 to 5 tons)
American Furnace Co., St. Louis, Mo. (to 10 tons)
American Standard, Air Conditioning Div., New York, N. Y. (2, 3, 4, & 5 hp size)
Armstrong Furnace Co., Div. of National Union Electric Corp., Columbus, O. (2, 3 & 5 ton)
Baker Mfg. Co., Wichita Falls, Tex.
Blazer & Son, M., Passaic, N. J. (to 300 tons)
Bohn Aluminum & Brass Corp., Detroit, Mich. (2, 3, 5, & 7 ton)
Bohn Aluminum & Brass Corp., Betz Div., Danville, Ill. (2-15 tons)
Carrier Corp., Syracuse, N. Y.
Chrysler Airtemp, Div. of Chrysler Corp., Dayton, O.
Cobell Industries, Inc., Cleburne, Tex., (2 to 5 ton)
Cond-Air Div., Elliott Engineering Co., Lynwood, Calif.
Curtis Mfg. Co., Refrigeration Div., St. Louis, Mo.
Day & Night Mfg. Co., La Puente, Calif. (3, 4, 5, 7½ tons)
Deansteel Products Co., San Antonio, Tex. (3, 5, 7½ ton)
Domestic Mfg. Corp., Houston, Tex.
Drayer-Hanson, Div. of National-U. S. Radiator Corp., Los Angeles, Calif.
Dunham-Bush, Inc., West Hartford, Conn.
Edwards Engineering Corp., Pompton Plains, N. J. (2 to 1000 tons)
F 5 Air Conditioning Corp., Tulsa, Okla. (2-80 tons)
Fedders-Quigan Corp., Buffalo, N. Y.
Friedrick Refrigerators, Inc., San Antonio, Tex. (5 to 15 hp)
Frigidaire Div., General Motors Corp., Dayton, O. (2 thru 15 tons)
Frigid Coil, Inc., El Monte, Calif.
General Air Conditioning Corp., Los Angeles, Calif. (2, 3 ton)
General Electric Co., Air Conditioning Dept., Tyler, Tex. (7½ & 10 tons)
Halstead & Mitchell, Pittsburgh, Pa. (2-100 tons)
Heat-Exchangers, Inc., Chicago, Ill. (up to 10 ton)
Henry Furnace Co., The, Medina, O. (2, 3, 5 ton)
Kirsch Co., Refrigeration Div., Sturgis, Mich.
Kramer Trenton Co., Trenton, N. J.
Larkin Coils, Inc., Atlanta, Ga. (2-20 tons)
Lennox Industries, Inc., Marshalltown, Ia. (2, 3, 5, 7½ and 10 ton)
Magic Aire Div., United Electric Co., Wichita Falls, Tex., (2, 3, 5, 7½ & 10 tons)
Marlo Coil Co., **St. Louis, Mo. (1 to 20 tons)**
McCord Corp., **Detroit, Mich. (to 3 HP)**
McQuay, Inc., Minneapolis, Minn. (3 to 50 tons)
Mueller Climatrol Div. of Worthington Corp., Milwaukee, Wis.
Peerless of America, Inc., Chicago, Ill.
Perfection Industries Div., Hupp Corp., Cleveland, O. (2 thru 20 tons)
Recold Corp., Los Angeles, Calif. (5 thru 40 tons)
Refrigeration **Appliances, Inc., Chicago, Ill.** (1-30 tons)
Rempe Co., Chicago, Ill.
Rittling Corp., The, Buffalo, N. Y. (up to 7½ hp)
Roberts-Gordon Appliance Corp., Buffalo, N. Y. (2-5 tons)
Rome-Turney Radiator Co., Rome, N. Y.
Round Oak Co., Inc., Dowagiac, Mich. (1½-5 HP)
Silvercraft, Inc., Louisville, Ky.
Superior **Radiator Corp., Minneapolis, Minn.** (½ thru 30 HP)
Temtrol, Inc., Okarche, Okla.
Tenney Engineering, Inc., Union, N. J.
Thermal Engineering Corp., Houston, Tex.
Thermo King Corp., Minneapolis, Minn.
Trane Co., The, La Crosse, Wis. (2 to 30 tons)
Tubenfin Coil Co., Houston, Tex. (up to 20 tons)
Typhoon Air Conditioning Co., Div. of Hupp Corp., Brooklyn, N. Y.
United States Air Conditioning Corp., Delaware, O. (3, 5, 7½ & 10 hp)
Vilter Mfg. Co., The, **Milwaukee, Wis.**
Westinghouse Electric Corp., Air Conditioning Div., Staunton, Va.
Whirlpool Corp., St. Joseph, Mich.
Witt Co., A. H., Los Angeles, Calif. (2-50 tons)
Worthington Corp., East Orange, N. J.

CONDENSERS, REFRIGERATING, EVAPORATIVE

Acme Industries, Inc., Jackson, Mich.
Airtemp Construction, Div. of Chrysler Corp., Dayton, O.
American Blower Div. of American-Standard, Detroit, Mich.
American Cooling Tower Co., Kansas City, Mo.
Baltimore Aircoil Co., Inc., Baltimore, Md.
Blazer & Son, M., Passaic, N. J. (to 300 tons)
Buffalo Forge Co., Buffalo, N. Y.
Carrier Corp., Syracuse, N. Y. ("Freon," ammonia)
Chrysler Airtemp, Div. of Chrylser Corp., Dayton, O. (5 to 30 tons)
Cobell Industries, Inc., Cleburne, Tex. (2 to 10 tons)
Cond-Air Div., Elliott Engineering Co., Lynwood, Calif.
Curtis Mfg. Co., Refrigeration Div., St. Louis.
Dean Thermo-Panel Coil Div., Dean Products, Inc., Brooklyn, N. Y.
Drayer-Hanson, Div. of National-U. S. Radiator Corp., Los Angeles, Calif.
Dunham-Bush, Inc., West Hartford, Conn.
Frick Co., Waynesboro, Pa.
Governair Corp., Oklahoma City, Okla.
Imeco, Inc., Chicago, Ill.
Kennard Products, American Air Filter Co., Inc., Louisville, Ky.
Larkin Coils, Inc., Atlanta, Ga.
Marlo Coil Co., St. Louis, Mo.
McQuay, Inc., Minneapolis, Minn.
National-U. S. Radiator Corp., Johnstown, Pa.
Niagara Blower Co., New York, N. Y.
Recold Corp., Los Angeles, Calif. (2 thru 230 tons)
Refrigeration Appliances, Inc., Chicago, Ill.
Temtrol, Inc., Okarche, Okla.
Trane Co., The, LaCrosse, Wis.
Typhoon Air Conditioning Co., Div. of Hupp Corp., Brooklyn, N. Y.
Vilter Mfg. Co., Milwaukee, Wis.
Wall Tube and Metal Products Co., Newport, Tenn.
Watkins Co., J. E., Maywood, Ill.
Westinghouse Electric Corp., Air Conditioning Div., Staunton, Va.
Worthington Corp., East Orange, N. J.
X L Refrigerating Co., Chicago, Ill.
York Corp., Subsidiary of Borg-Warner Corp., York, Pa.
Yorktowne Machine Co., York, Pa.

CONDENSERS, REFRIGERATING, SHELL AND COIL

Acme Industries, Inc., Jackson, Mich.
Bell & Gossett Co., Morton Grove, Ill.
Carrier Corp., Syracuse, N. Y.
Condenser Service & Engineering Co., Inc., Hoboken, N. J.
Curtis Mfg. Co., Refrigeration Div., St. Louis, Mo.
Davis Engineering Corp., Elizabeth, N. J.
Dean Thermo-Panel Coil Div., Dean Products, Inc., Brooklyn, N. Y.
Dunham-Bush, Inc., West Hartford, Conn.
Edwards Engineering Corp., Pompton Plains, N. J.
Filtrine Mfg. Co., Inc., Waldwick, N. J.
General Fittings Co., East Greenwich, R. I.
Halstead & Mitchell, Pittsburgh, Pa. (Double tube)
Heat-X Inc., Brewster, N. Y.
Heatron, Inc., York, Pa.
Heil Process Equipment Corp., Cleveland, O.
Howe Ice Machine Co., Chicago, Ill. (Freon ammonia methyl chloride)
Lehigh Mfg. Co., Div. of Lehigh Inc., Easton, Pa.
National-U. S. Radiator Corp., Johnstown, Pa.
Nooter Corp., St. Louis, Mo.
Reco Products Div., Recony Corp., New York, N. Y.
Rome-Turney Radiator Co., Rome, N. Y.
Trane Co., The, LaCrosse, Wis.
Typhoon Air Conditioning Co., Div. of Hupp Corp., Brooklyn, N. Y.
Vilter Mfg. Co., Milwaukee, Wis.
Westinghouse Electric Corp., Air Conditioning Div., Staunton, Va.
Whitlock Mfg. Corp., W. Hartford, Conn.
Worthington Corp., East Orange, N. J.
X L Refrigerating Co., Chicago, Ill.
York Corp., Subsidiary of Borg-Warner Corp., York, Pa.
Young Radiator Co., Racine, Wis.

CONDENSERS, REFRIGERATING, SHELL AND TUBE

Acme Industries, Inc., Jackson, Mich.
Adsco Div., Yuba Consolidated Industries, Inc., Buffalo, N. Y.
Airtemp Construction, Div. of Chrysler Corp., Dayton, O.
Armstrong Co., Richard M., West Chester, Pa.
Bell & Gossett Co., Morton Grove, Ill.
Biggs Boiler Works Co., E. Akron, O.
Buxton Mfg. Co., Dover, N. J.
Carrier Corp., Syracuse, N. Y.
Chrysler Airtemp, Div. of Chrysler Corp., Dayton, O.
Condenser Service & Engineering Co., Inc., Hoboken, N. J.
Cooley Co., E. C., San Francisco, Calif.
Curtis Mfg. Co., Refrigeration Div., St. Louis, Mo.
Davis Engineering Corp., Elizabeth, N. J.
Dersch, Gesswein & Neuert, Inc., Chicago, Ill.
Devine Mfg. Co., Inc., J. P., Pittsburgh, Pa.
Downingtown Iron Works, Inc., Div. of Pressed Steel Tank Co., Downingtown, Pa.
Doyle & Roth Mfg. Co., Inc., Brooklyn, N. Y.
Dunham-Bush, Inc., West Hartford, Conn.
Frick Co., Waynesboro, Pa.
Heat-X, Inc., Subsidiary of Dunham-Bush, Inc., West Hartford, Conn.
Howe Ice Machine Co., Chicago, Ill.
Manning & Lewis Engineering Co., Newark, N. J.
National-U. S. Radiator Corp., Johnstown, Pa.
Nooter Corp., St. Louis, Mo.
Ohio Pipe Bending & Machine Co., Cleveland, O.
Patterson-Kelley Co., Inc., The, East Stroudsburg, Pa.
Ready-Power Co., The, Detroit, Mich.
Reco Products Div., Recony Corp., New York.
Reliance Refrigerating Machine Co., Chicago, Ill.
Schnacke, Inc., Evansville, Ind.
Standard Refrigeration Co., Chicago, Ill.
Stewart Ice Machine Co., Pomona, Calif.
Trane Co., The, LaCrosse, Wis.
Typhoon Air Conditioning Co., Div. of Hupp Corp., Brooklyn, N. Y.
Vilter Mfg. Co., Milwaukee, Wis.
Vogt Machine Co., Henry, Louisville, Ky.
Westinghouse Electric Corp., Air Conditioning Div., Staunton, Va.
Whitlock Mfg. Co., W. Hartford, Conn.
Worthington Corp., East Orange, N. J.
X L Refrigerating Co., Chicago, Ill.
York Corp., Subsidiary of Borg-Warner Corp., York, Pa.
Young Radiator Co., Racine, Wis.
Yula Corp., Bronx, N. Y.

CONDENSERS, WATER DISTRIBUTORS FOR

See Distributors, Water, for Condensers

CONDENSING UNITS

See Compressors

CONDUIT, UNDERGROUND PIPING

Byers Co., A. M., Pittsburgh, Pa. (Wrought iron)
Dockstader, Inc., S. E., Washington, D. C.
Durant Insulated Pipe Co., E. Palo Alto, Calif.
Durant Insulated Pipe Co., Inc., Williamstown, N. J.
Goodrich Industrial Products Co., B. F., Koroseal Div., Marietta, O. (PVC)
Heat Transmission Conduit Co., Cleveland, O.
Johns-Manville, New York, N. Y. (asbestos-cement)
Kaiser Co., E. B., Glenview, Ill.
Line Material Industries, McGraw-Edison Co., Milwaukee, Wis.
Mearlcrete Div., Mearl Mfg. Corp., Roselle Park, N. J.
Porter & Co., Inc., H. W., Newark, N. J.
Ric-wiL, Inc., Barberton, O.
Spang-Chalfant, Div. of National Supply Co., Pittsburgh, Pa.
Stillwater Clay Products Co., The, Cleveland, O.

CONNECTIONS, DUCT, FLEXIBLE (ASBESTOS, CANVAS, ETC.)

American Metal Hose Div., American Brass Co., Waterbury, Conn.
Cain Mfg. Co., Birmingham, Ala.
Duro-Dyne Corp., Farmingdale, Long Island, N. Y.
Elgen Mfg. Corp., Long Island City, N. Y.
Flexaust Co., New York, N. Y.
Flexible Tubing Corp., Guilford, Conn.
Flexonics Corp., Maywood, Ill.
Grant Wilson, Inc., Chicago, Ill.
Johns-Manville, New York, N. Y.
Keldur Div. of Quimby & Co., Chester, N. J.
LaFavorite Rubber Mfg. Co., Hawthorne, N. J. (rubber)
Nicolet Industries, Inc., Hamilton, O.
St. Clair Rubber Co., Detroit, Mich.
Titeflex, Inc., East Springfield, Mass.
United States Rubber Co., New York, N. Y.
Ventfabrics Inc., Chicago, Ill.
Wagner Awning & Mfg. Co., Cleveland, O.

CONNECTORS, FILLING, HYDROSTATIC TEST

Airaterra (Roylyn Products), Glendale, Calif.
Cobra Metal Hose Div., D-K Mfg. Co., Chicago, Ill.
Gasoilair Equipment, New Haven, Conn.
Mechanical Products Corp., Chicago, Ill.
Scully Signal Co., Melrose, Mass.

CONNECTORS, FOR NON-METALLIC DUCT FABRICATION

Acme Steel Co., Chicago, Ill. (Strapping)
Cain Mfg. Co., Birmingham, Ala.
Colonial Plastics Mfg. Co., Industrial Div., Cleveland, O. (unplasticized polyvinyl chloride)
Lumm Co., A. H., Toledo, O.
United States Rubber Co., New York, N. Y.

CONTINUOUS HEATERS

See Heaters, Steam Jet, for Liquids

CONTROL, SAFETY, GAS FLOW

Dewey Gas Furnace Co., Detroit, Mich.
Eclipse Fuel Engineering Co., Rockford, Ill.
General Controls Co., Glendale, Calif.

CONTROL SYSTEMS, PRE-ASSEMBLED AS UNITS, FOR HEATING, COOLING AND VENTILATING

Factory Assemblies Using Other Manufacturers' Valves, Thermostats, Damper Motors, etc.

American Moistening Co., Cleveland, N. C.
Arens Controls, The, Evanston, Ill.
Automatic Devices Co., Inc., Western Springs, Ill.
Bahnson Co., Winston-Salem, N. C.
Barber-Colman Co., Rockford, Ill.
Best Combustion Equipment Co., Inc., W. N., Carlstadt, N. J.
Better Engineered Controls, Los Angeles, Calif.
Bristol Co., The, Waterbury, Conn.
Brooks Rotameter Co., Lansdale, Pa.
Carvell Heat Equipment Co., Los Angeles, Calif.
Circle-Air Industries, Inc., Brooklyn, N. Y.
Cleveland Controls, Inc., Cleveland, O.
Cutler-Hammer, Inc., Milwaukee, Wis.
Defender Instrument & Regulator Co., Boody, Ill.
Devco Engineering, Inc., Control Systems Div., Caldwell, N. J.
Dunham-Bush, Inc., West Hartford, Conn.
Fischer & Porter Co., Hatboro, Pa.
General Controls Co., Glendale, Calif.
Heat-Timer Corp., New York, N. Y.
Illinois Engineering Products, American Air Filter Co., Inc., Louisville, Ky.
International Business Machines Corp., New York, N. Y.
Master Control Co., The, Cuyahoga Falls, O.
Midwest Air Conditioning Co., Des Moines, Ia.

Midwest Automatic Control Co., Des Moines, Ia.
National Controls, Inc., Newton, Mass.
Ray Oil Burner Co., San Francisco, Calif.
Reliance Instrument Mfg. Corp., Glen Cove, Long Island, N. Y.
Webster & Co., Warren, Camden, N. J.
West Instrument Corp., Chicago, Ill.

CONTROLLERS AND STARTERS, MOTOR

ACEC Electric Corp., New York, N. Y.
Airgard Mfg. Co., Chicago, Ill.
Allen-Bradley Co., Milwaukee, Wis.
Allis-Chalmers Mfg. Co., Milwaukee, Wis.
Arrow-Hart & Hegeman Elec. Co., Hartford, Conn.
Better Engineered Controls, Los Angeles, Calif.
Clark Controller Co., Cleveland, O.
Curtis Development & Mfg. Co., Milwaukee, Wis.
Cutler-Hammer, Inc., Milwaukee, Wis.
Defender Instrument & Regulator Co., Boody, Ill.
Ebert Electronics Corp., Queens Village, N. Y.
Electric Controller & Mfg. Co., Div. of Square D Co., Cleveland, O.
Electric Machinery Mfg. Co., Minneapolis, Minn.
Electric Products Co., Cleveland, O.
Franklin Dales Co., Akron, O.
Furnas Electric Co., Batavia, Ill.
General Controls Co., Glendale, Calif.
General Electric Co., Apparatus Sales Div., Schenectady, N. Y.
General Electric Co., Appliance Control Dept., Morrison, Ill.
Guardian Electric Mfg. Co., Chicago, Ill.
Ideal Electric & Mfg. Co., Mansfield, O.
International Business Machine Corp., New York, N. Y.
Magnetrol, Inc., Chicago, Ill.
Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.
Monitor Controller, Rockland, Mass.
Nelson Electric Mfg. Co., Tulsa, Okla.
Potter & Brumfield Sales Co., Inc., Princeton, Ind.
Reynolds Electric Co., River Grove, Ill.
Square D Co., Industrial Controller Div., Milwaukee, Wis.
Teleflex Inc., North Wales, Pa.
United Electric Controls Co., Watertown, Mass.
Ward Leonard Electric Co., Mt. Vernon, N. Y.
Westinghouse Electric Corp., Pittsburgh, Pa.
Zenith Electric Co., Chicago, Ill.

CONTROLS, AIR CONDITIONING

See Humidistats; Indicator-Controllers; Operators, Damper; Operators, Valve; Recorder-Controllers; Regulators; Relays; Switches; Thermostats; Valves, Diaphragm; Valves, Refrigeration; Valves, Solenoid

CONTROLS, DOOR, ELECTRIC EYE (FOR AIR CONDITIONED ROOMS)

Barber-Colman Co., Rockford, Ill.
De-Tec-Tronic Corp., Chicago, Ill.
Photobell Co., Inc., New York, N. Y.
Stanley Works, The, New Britain, Conn.
Sterns-Flinn Corp., New York, N. Y.
Westinghouse Electric Corp., Pittsburgh, Pa.
Weston Instruments, Div. of Daystrom, Inc., Newark, N. J.
Worner Electronic Devices, Rankin, Ill.

CONTROLS, DRAFT, BAROMETRIC

Ace Instrument Co., Inc., Brooklyn, N. Y.
Boston Machine Works Co., Lynn, Mass.
Bristol Co., The, Waterbury, Conn.
Cole-Sewell Engineering Co., St. Paul, Minn.
Combustion Equipment Co., Moline, Ill.
Defender Instrument & Regulator Co., Boody, Ill.
Empire Ventilation Equipment Co., Long Island City, N. Y.
Ess Instrument Co., Bergenfield, N. J.
Field Control Div., H. D. Conkey & Co., Mendota, Ill.
Fuel Reduction Corp., Chicago, Ill.
Fuelguard Co., Dallas, Tex.
General Controls Co., Glendale, Calif.
Hotstream Heater Co., Cleveland, O.
Minneapolis-Honeywell Regulator Co., Industrial Div., Philadelphia, Pa.
Plant Equipment Div., General Blower Co., Inc., Philadelphia, Pa.
Preferred Utilities Mfg. Corp., New York.
Reliance Instrument Mfg. Corp., Glen Cove, Long Island, N. Y.
Republic Flow Meters Co., Chicago, Ill.
Salina Metal Products Co., Salina, Kan.
Simplex Mfg. Co., Fond du Lac, Wis.
Steinen Mfg. Co., Wm., Newark, N. J.
Walker Mfg. & Sales Co., St. Joseph, Mo.
Windmaster Div., Lima Register Co., Lima, O.

CONTROLS, FAN

A-P Controls Div., Controls Co. of America, Milwaukee, Wis.
Barber-Colman, Inc., Rockford, Ill.
Cam Stat, Inc., Div. of the Paul Henry Co., Los Angeles, Calif.
Curtis Development & Mfg. Co., Milwaukee, Wis.
General Controls Co., Glendale, Calif.
General Electric Co., Apparatus Sales Div., Schenectady, N. Y.
Hart Mfg. Co., The, Hartford, Conn.
McLarty Systems, Battle Creek, Mich.
Mercoid Corp., Chicago, Ill.
Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.
Optimum Control Corp., Cleveland, O.
Penn Control, Inc., Goshen, Ind.
Therm-O-Disc, Inc., Mansfield, O.
White-Rodgers Co., St. Louis, Mo.

CONTROLS, FIRE PROTECTION SPRINKLER SYSTEMS

Allen Mfg. Co., W. D., Bellwood, Ill.
American District Telegraph Co., New York, N. Y.
Automatic Control Co., St. Paul, Minn.
Clark Controller Co., Cleveland, O.
Fenwal Inc., Ashland, Mass.
General Controls Co., Glendale, Calif.
Grinnell Co., Inc., Providence, R. I.
Raisler Corp., Grimes Sprinkler Div., New York, N. Y.
Rockwood Sprinkler Co., Worcester, Mass.
Sperti Faraday, Inc., Adrian, Mich.
Synchro-Start Products, Inc., Skokie, Ill.

CONTROLS, FLAME FAILURE

A-P Controls Div., Controls Co. of America, Milwaukee, Wis.
American District Telegraph Co., New York, N. Y.
Bailey Meter Co., Cleveland, O.
Barber-Colman Co., Rockford, Ill.
Baso, Inc., Milwaukee, Wis.
Bristol Co., The, Waterbury, Conn.
Defender Instrument & Regulator Co., Boody, Ill.
De-Tec-Tronic Corp., Chicago, Ill.
Drying Systems Co., Chicago, Ill.
Electronics Corp. of America, Cambridge, Mass.
Ess Instrument Co., Bergenfield, N. J.
Fuelguard Co., Dallas, Tex.
General Controls Co., Glendale, Calif. and Skokie, Ill.
General Electric Co., Apparatus Sales Div., Schenectady, N. Y.
Haney Burner Div., Southwest Gas Corp., Las Vegas, Nev.
Instruments, Inc., Tulsa, Okla.
Mercoid Corp., The, Chicago, Ill.
Mettler Co., Inc., The, Div. of Eclipse Fuel Engineering Co., Rockford, Ill.
Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.
Minneapolis-Honeywell Regulator Co., Industrial Div., Philadelphia, Pa.
Penn Controls, Inc., Goshen, Ind.
Photobell Co., Inc., New York, N. Y.
Reliance Instrument Mfg. Corp., Glen Cove, Long Island, N. Y.
Scully Signal Co., Melrose, Mass.
Stout & Sons, David, St. Louis, Mo.
Teleflex Inc., North Wales, Pa.
Webster Engineering Co., Tulsa, Okla.
White-Rodgers Co., St. Louis, Mo.

CONTROLS, HEATING

See Alarms; Humidistats; Indicator-Controllers; Operators, Damper; Operators, Valve; Recorder-Controllers; Regulators; Relays; Switches; Systems, Combustion Control; Systems, Heating; Thermostats; Valves, Balancing, for Forced Hot Water Heating Systems; Valves, Diaphragm; Valves, Flow Control; Valves, Mixing; Valves, Pressure Reducing and Regulating; Valves, Radiator; Valves, Solenoid

CONTROLS, PUSH-PULL

See Shafts, Flexible, for Control

CONTROLS, REFRIGERATION

See Humidistats; Operators, Valve; Relays; Switches; Thermostats; Valves, Refrigeration; Valves, Solenoid

CONVECTORS

See Radiation, Convection Type

CONVERTORS, STEAM

Adsco Div., Yuba Consolidated Industries, Inc., Buffalo, N. Y.
Alstrom Corp., New York, N. Y.
Bell & Gossett Co., Morton Grove, Ill.
Beltran Associates, Inc., Brooklyn, N. Y.
Bernstrom, Inc., C. R., Providence, R. I.
Birchfield Boiler, Inc., Tacoma, Wash.
Buxton Mfg. Co., Dover, N. J.
Clayton Mfg. Co., El Monte, Calif.
Cooley Co., E. C., San Francisco, Calif.
Davis Engineering Corp., Elizabeth, N. J.
Dunham-Bush, Inc., West Hartford, Conn.
Ellicott Fabricators, Inc., Baltimore, Md.
General Fittings Co., East Greenwich, R. I.
Lindy Heaters, Inc., New York, N. Y.
Manning & Lewis Engineering Co., Newark, N. J.
Mauney, Rowe A., Marion, N. C.
Patterson-Kelley Co., Inc., The, East Stroudsburg, Pa.
Richmond Engineering Co., Richmond, Va.
Taco Heaters, Inc., Cranston, R. I.
Yula Corp., Bronx, N. Y.

CONVEYORS, COAL AND ASH

Ajax Flexible Coupling Co., Inc., Westfield, N. Y.
American Coal Burner and Wood Stoker Corp., Chicago, Ill.
Auburn Foundry Inc., Heating Div., Auburn, Ind.
Bil-Jax, Inc., Archbold, O.
Builders-Providence Div., B-I-F Industries, Inc., Providence, R. I. (continuous weighing)
Canton Stoker Corp., Canton, O.
Chain Belt Co., Milwaukee, Wis.
Cleveland Crane & Eng. Co., Wickliffe, O.
Dayton Automatic Stoker Co., Dayton, O.
Electric Furnace-Man, Inc., Emmaus, Pa.
Fluor Products Co., Whittier, Calif.
Hager Bros., Rockford, Ill.
Hewitt-Robins, Inc., Stamford, Conn.
Jeffrey Mfg. Co., Columbus, O.
Johnston & Jennings Co., Cleveland, O.
Joy Mfg. Co., Pittsburgh, Pa.
Kol-Master Corp., Oregon, Ill.
Link-Belt Co., Chicago, Ill.
New London Engineering Co., New London, Wis.
Sealmaster Bearings, Div. of Stephens-Adamson Mfg. Co., Aurora, Ill.
Spurgeon Co., Warren, Mich.
United States Rubber Co., New York, N. Y. (belts)
Whitty Co., Inc., Boston, Mass.

COOLERS, CRANE CAB

Dravo Corp., Machinery Div., Pittsburgh, Pa.
Ellis & Watts Products, Inc., Cincinnati, O.
Lintern Corp., Painesville, O.
Trane Co., The, LaCrosse, Wis.

COOLERS, EVAPORATIVE

See Units, Air Conditioning, Summer, Evaporative Cooling Type

COOLERS, OIL

Acme Industries, Inc., Jackson, Mich.
Adsco Div., Yuba Consolidated Industries, Inc., Buffalo, N. Y.
Alco Products, Inc., Schenectady, N. Y.
American Cooling Tower Co., Kansas City, Mo.

American-Standard, Ross Heat Exchanger Div., Buffalo, N. Y.
Aminco Refrigeration Products, American Injector Co., Detroit, Mich.
Andale Co., Philadelphia, Pa.
Armstrong Co., Richard M., West Chester, Pa.
Baltimore Aircoil Co., Inc., Baltimore, Md.
Bell & Gossett Co., Morton Grove, Ill.
Buxton Mfg. Co., Dover, N. J.
Chrysler Airtemp, Div. of Chrysler Corp., Dayton, O.
Clifford Mfg. Co., Div. of Standard-Thomson Corp., Waltham, Mass.
Condenser Service & Engineering Co., Inc., Hoboken, N. J.
Cooley Co., E. C., San Francisco, Calif.
Croll-Reynolds Engineering Co., Inc., New York, N. Y.
Davis Engineering Corp., Elizabeth, N. J.
Dean Thermo-Panel Coil Div., Dean Products, Inc., Brooklyn, N. Y.
Devine Mfg. Co., Inc., J. P., Pittsburgh, Pa.
Downingtown Iron Works, Inc., Div. of Pressed Steel Tank Co., Downingtown, Pa.
Doyle & Roth Mfg. Co., Inc., Brooklyn, N. Y.
Ellis & Watts Products, Inc., Cincinnati, O. (solvent)
Fedders-Quigan Corp., Buffalo, N. Y.
Fluor Products Co., Whittier, Calif.
G & O Mfg. Co., New Haven, Conn.
Gilbert Brass Foundry Co., St. Louis, Mo.
Graham Mfg. Co., Inc., New York, N. Y.
Griffin & Co., Louisville, Ky.
Griscom-Russell Co., The, Massillon, O.
Heat-X, Inc., Subsidiary of Dunham-Bush, Inc., West Hartford, Conn.
Heatron, Inc., York, Pa.
Kellogg Co., The, M. W., New York, N. Y.
Manning & Lewis Engineering Co., Newark, N. J.
Marlo Coil Co., St. Louis, Mo.
Modine Mfg. Co., Racine, Wis.
National Pipe Bending Co., New Haven, Conn.
Patterson-Kelley Co., Inc., The, East Stroudsburg, Pa.
Rome-Turney Radiator Co., Rome, N. Y.
Schutte and Koerting Co., Cornwells Heights, Bucks County, Pa.
Sims Co., Erie, Pa.
Struthers Wells Corp., Warren, Pa.
Super Radiator Corp., Minneapolis, Minn.
Taco Heaters, Inc., Cranston, R. I.
Temprite Products Corp., Dept. HPAC, Birmingham, Mich.
Trane Co., The, LaCrosse, Wis.
Tranter Mfg., Inc., Lansing, Mich.
Vogt Machine Co., Henry, Louisville, Ky.
Whitlock Mfg. Co., W. Hartford, Conn.
Yates-American Machine Co., Heat Transfer Products Div., Beloit, Wis.
York Corp., Subsidiary of Borg-Warner Corp., York, Pa.
Young Radiator Co., Racine, Wis.
Yula Corp., Bronx, N. Y.

COOLERS, UNIT (FLOOR TYPE)

Not air conditioning units, but floor mounted unit with coil and centrifugal fans without filters, for connection to remote compressor or cold water supply. For air conditioning units see Units, Air Conditioning

Auburn Burner Co., Auburn, Ind.
Buffalo Forge Co., Buffalo, N. Y.
Carrier Corp., Syracuse, N. Y.
Chrysler Airtemp, Div. of Chrysler Corp., Dayton, O.
Circle-Air Industries, Inc., Brooklyn, N. Y.
Curtis Mfg. Co., Refrigeration Div., St. Louis, Mo.
Dole Refrigerating Co., Chicago, Ill.
Drayer-Hanson, Div. of National-U. S. Radiator Corp., Los Angeles, Calif.
Dunham-Bush, Inc., West Hartford, Conn.
Filtrine Mfg. Co., Inc., Waldwick, N. J.
Frick Co., Waynesboro, Pa.
Governair Corp., Oklahoma City, Okla.
Howe Ice Machine Co., Chicago, Ill.
Imeco, Inc., Chicago, Ill.
King Co. of Owatonna, The, Owatonna, Minn.
Larkin Coils, Inc., Atlanta, Ga.
Marlo Coil Co., St. Louis, Mo.
McQuay, Inc., Minneapolis, Minn.
Modine Mfg. Co., Racine, Wis.
Niagara Blower Co., New York, N. Y.
Reco Products Div., Recony Corp., New York, N. Y.
Recold Corp., Los Angeles, Calif.
Refrigeration Appliances, Inc., Chicago, Ill.
Rigidbilt Inc., Chicago, Ill.
Rinehart Inc., Richmond, Ind.
St. Louis Blow Pipe & Heater Co., Div. of Young Sales Corp., St. Louis, Mo.
Vilter Mfg. Co., Milwaukee, Wis.
X L Refrigerating Co., Chicago, Ill.
York Corp., Subsidiary of Borg-Warner Corp., York, Pa.

COOLERS, UNIT (SUSPENDED TYPE)

Not air conditioning units, but suspended unit with coil and propeller fan, without filters, for connection to remote compressor or cold water supply. For air conditioning units, see Units, Air Conditioning

American Cooling Tower Co., Kansas City, Mo.
Bohn Aluminum & Brass Corp., Betz Div., Danville, Ill.
Buffalo Forge Co., Buffalo, N. Y.
Carrier Corp., Syracuse, N. Y.
Chrysler Airtemp, Div. of Chrysler Corp., Dayton, O.
Curtis Mfg. Co., Refrigeration Div., St. Louis, Mo.
Dean Thermo-Panel Coil Div., Dean Products, Inc., Brooklyn, N. Y.
Dole Refrigerating Co., Chicago, Ill.
Drayer-Hanson Div. of National-U. S. Radiator Corp., Los Angeles, Calif.
Dunham-Bush, Inc., West Hartford, Conn.
Frigid Coil, Inc., El Monte, Calif.
Governair Corp., Oklahoma City, Okla.
Howe Ice Machine Co., Chicago, Ill.
Imeco, Inc., Chicago, Ill.
King Co. of Owatonna, The, Owatonna, Minn.
Kramer Trenton Co., Trenton, N. J.
Larkin Coils, Inc., Atlanta, Ga.
Marlo Coil Co., St. Louis, Mo.
Master-Bilt Refrigeration Mfg. Co., St. Louis, Mo.
McQuay, Inc., Minneapolis, Minn.
Murray Mfg. Co., D. J., Wausau, Wis.
Niagara Blower Co., New York, N. Y.
Peerless of America, Inc., Chicago, Ill.
Reco Products Div., Recony Corp., New York, N. Y.
Recold Corp., Los Angeles, Calif.
Refrigeration Appliances, Inc., Chicago, Ill.
Rempe Co., Chicago, Ill.
Rigidbilt Inc., Chicago, Ill.
Rinehart Inc., Richmond, Ind.
St. Louis Blow Pipe & Heater Co., Div. of Young Sales Corp., St. Louis, Mo.
Tenney Engineering, Inc., Union, N. J.
Vilter Mfg. Co., Milwaukee, Wis.
Watkins Co., J. E., Maywood, Ill.
Wilson Engineering Corp., Chicago, Ill.
Wing Mfg. Co., L. J., Div. of Aero Supply Mfg. Co., Inc., Linden, N. J.
X. L Refrigerating Co., Chicago, Ill.
York Corp., Subsidiary of Borg-Warner Corp., York, Pa.

COOLING COILS

See Surface Finned. Cooling

COOLING SURFACE

See Surface Finned Cooling

COOLING TOWERS

See Towers, Cooling

COOLING UNITS

See Units, Air Conditioning; Coolers, Unit

COPPER PIPE

See Pipe, Brass and Copper

COPPER SHEETS

See Sheets, Copper

COPPER TUBE FITTINGS

See Fittings, Copper Tube

COPPER TUBE FITTINGS, FLARED

See Fittings, Copper Tube, Flared

COPPER TUBING

See Tubing, Brass and Copper

CORROSION PREVENTIVES

See Devices, Electrolytic, for Preventing Corrosion; Treatment, Steam System, to Inhibit Corrosion; and Treatment, Water, to Inhibit Corrosion

COUNTERS, DUST

Bausch & Lomb Optical Co., Rochester, N. Y.
Day Co., The, Minneapolis, Minn.
Hill & Co., E. Vernon., Lake Geneva, Wis.
Mine Safety Appliances Co., Pittsburgh, Pa.
Willson Products, Inc., Reading, Pa.

COUPLINGS, FLEXIBLE, POWER TRANSMISSION

Ajax Flexible Coupling Co., Inc., Westfield, N. Y.
Blood Brothers Machine Div., Rockwell Spring and Axle Co., Allegan, Mich. (Universal joints)
Boston Gear Wks., Quincy, Mass.
Brooks Equipment Corp., Hoboken, N. J.
Browning Mfg. Co., Maysville, Ky.
Central Die Casting & Mfg. Co., Inc., Chicago, Ill.
Certified Flexible Couplings, Inc., Mt. Vernon, N. Y.
Chain Belt Co., Milwaukee, Wis.
Chicago Die Casting Mfg. Co., Chicago, Ill.
Clark Flexible Link Shaft Co., Newton Highlands, Mass.
Clifford Mfg. Co., Div. of Standard-Thomson Corp., Waltham, Mass.
Climax Metal Products Co., Cleveland, O.
Congress Drives Div., Tann Corp., Detroit, Mich.
De Laval Steam Turbine Co., Trenton, N. J.
Dodge Mfg. Corp., Mishawaka, Ind.
Elliott Co., Jeannette, Pa.
Falk Corp., Milwaukee, Wis.
Guardian Products Corp., Michigan City, Ind.
Hewitt-Robins, Inc., Stamford, Conn.
Jeffrey Mfg. Co., Columbus, O.
Jones Machinery Div., Hewitt-Robins, Inc., Chicago, Ill.
Koppers Company, Inc., Metal Products Div., Baltimore, Md.
Link Belt Co., Chicago, Ill.
Lord Mfg. Co., Erie, Pa.
Lovejoy Flexible Coupling Co., Chicago, Ill.
Mercury Clutch Div., Automatic Steel Products, Inc., Canton, O. (automatic centrifugal clutch)
Morse Chain Co., Ithaca, N. Y.
Philadelphia Gear Corp., Philadelphia, Pa.
Piezo Mfg. Corp., Staten Island, N. Y.
Poole Foundry & Machine Co., Baltimore, Md.
Ramsey Products Corp., Albany, N. Y.
Royersford Foundry & Machine Co., Inc., Royersford, Pa.
Sier Bath Gear & Pump Co., Inc., North Bergen, N. J.
Thomas Flexible Coupling Co., Warren, Pa.
Waldron Corp., John, New Brunswick, N. J. (pin type and gear type)
Whitney Chain Co., Hartford, Conn.
Wood's Sons Co., T. B., Chambersburg, Pa.
Zurn Industries, Inc., Erie, Pa.

COUPLINGS, PIPE

Acheson Mfg. Co., Rankin, Pa.
Aeroquip Corp., Jackson, Mich.
Aeroquip, Inc., Van Wert, O.
Afco Fitting Co., Div. of Curtis Mfg. Co., Cleveland, O.
Airaterra (Roylyn Products), Glendale, Calif.
Anderson Brass Co., Detroit, Mich.
Baker & Co., R. H., Los Angeles, Calif.
Band-It Co., Denver, Colo.
Byers Co., A. M., Pittsburgh, Pa. (Wrought iron)
Camco Fittings Inc., North Haven, Conn. (stainless)
Capitol Mfg. & Supply Co., Columbus, O.
Chase Brass & Copper Co., Waterbury, Conn.
Clow & Sons, Inc., James B., Chicago, Ill.
Cooper-Alloy Corp., Hillside, N. J. (stainless)
Dahl, G. W., Bristol, R. I.
Dresser Mfg. Div., Dresser Industries, Inc., Bradford, Pa.
Electric Steel Foundry Co., Portland, Ore.
Fibercast Co., Sand Spring, Okla.
Fischer & Porter Co., Hatboro, Pa. (glass to glass; glass to metal)
Flagg & Co., Inc., Stanley G., Philadelphia
Flodar Corp., Cleveland, O.
Frick Co., Waynesboro, Pa.
Frontier Bronze Corp., Niagara Falls, N. Y.
Gilbert Brass Foundry Co., St. Louis, Mo.
Goodrich Industrial Products Co., B. F., Akron, O.
Goodrich Industrial Products Co., B. F., Koroseal Div., Marietta, O. (PVC)

Grabler Mfg. Co., Cleveland, O.
Grinnell Co., Inc., Providence, R. I.
Gustin-Bacon Mfg. Co., Kansas City, Mo.
Harrisburg Steel Co., Div. of Harsco Corp., Harrisburg, Pa.
Henry Valve Co., Melrose Park, Ill.
Illinois Malleable Iron Co., Chicago, Ill.
Johns-Manville, New York, N. Y. (asbestos - cement)
Jordan Corp., Div. of OPW Corp., Cincinnati, O.
King Union Co., Inc., Hillsgrove, R. I.
Ladish Co., Cudahy, Wis.
Lenz Co., Dayton, O.
Malleable Iron Fittings Co., Branford, Conn.
McDonald Mfg. Co., A. Y., Dubuque, Ia.
Morris Coupling & Clamp Co., Kittanning, Pa.
Mueller Brass Co., Port Huron, Mich.
National Tube Div., United States Steel Corp., Pittsburgh, Pa.
New York Brass Foundry, New York, N. Y. (brass)
OPW Corp., Cincinnati, O.
Pacific Fittings Div., General Metals Corp., Hollydale, Calif.
Pipeline Coatings & Engineering Co., Los Angeles, Calif.
Pipe Line Development Co., Cleveland, O.
Pipe Plugs, Inc., Wellington, O.
Pittsburgh Brass Mfg. Co., Pittsburgh, Pa.
Pittsburgh Pipe & Coupling Co., Allison Park, Pa.
Pittsburgh Steel Co., Pittsburgh, Pa.
Porter Co., Inc., H. K., Forge & Fittings Div., W-S Fittings Wks., Roselle, N. J. (forged steel & stainless steel)
Rhode Island Fittings Co., Providence, R. I. (malleable)
Southern Pipe & Casing Co., Div. of U. S. Industries, Inc., Azusa, Calif.
Span Brass Mfg. Co., Otsego, Mich.
Spang-Chalfant, Div. of the National Supply Co., Pittsburgh, Pa.
Speedline Stainless Steel Fittings Div., Horace T. Potts Co., Philadelphia, Pa.
Star Stainless Screw Co., Paterson, N. J.
Steel Improvement & Forge Co., The, Cleveland, O.
Stockham Valves & Fittings, Birmingham, Ala.
Stokes Molded Products, Div. of The Electric Storage Battery Co., Trenton, N. J. (unplasticized polyvinyl chloride)
Swepco Tube Corp., Clifton, N. J.
Tube Turns Div. of Chemetron Corp., Louisville, Ky. (welding couplings)
Tube Turns Plastics, Inc., Louisville, Ky. (PVC)
U. S. Plug & Fitting Co., Wellington, O.
Union Malleable Mfg. Co., Ashland, O.
Union Metal Works Co., Inc., Chelsea, Mass.
United States Stoneware Co., New York, N. Y.
Vanton Pump & Equipment Corp., Hillside, N. J.
Victaulic Co. of America, Elizabeth, N. J.
Vogt Machine Co., Henry, Louisville, Ky.
Walworth Co., New York, N. Y. (steel, plastic and stainless)
Ward Foundries, Inc., J. P., Blossburgh, Pa.
Weatherhead Co., The, Ft. Wayne Div., Ft. Wayne, Ind.
Wheatland Tube Co., Philadelphia, Pa. (steel)
Wheeling Machine Products Co., Wheeling, W. Va.
Wheeling Steel Corp., Wheeling, W. Va.
Wiggins Oil Tool Co., Inc., E. B., Los Angeles, Calif.
Youngstown Sheet & Tube Co., Youngstown, O.

COUPLINGS, PIPE, DETACHABLE

Aero-Coupling Corp., Burbank, Calif.
Aeroquip Corp., Jackson, Mich.
Aeroquip, Inc., Van Wert, O.
Airaterra (Roylyn Products), Glendale, Calif.
Airserco Mfg. Co., Inc., Pittsburgh, Pa.
Allegheny Valve Co., Warren, Pa.
Alloy Stainless Products Co., Totowa, N. J.
American Flow Control Corp., Houston, Tex.
Anchor Coupling Co., Inc., Libertyville, Ill. (hose)
Baker & Co., R. H., Los Angeles, Calif.
Goodrich Industrial Products Co., B. F., Koroseal Div., Marietta, O. (PVC)
Henry Valve Co., Melrose Park, Ill.
Hunt & Son, Inc., C. B., Salem, O.
Johnson Metal Hose, Inc., Waterbury, Conn.
Jordan Corp., Div. of OPW Corp., Cincinnati, O.
Morris Coupling & Clamp Co., Kittanning, Pa.
Nelson Foundry Co., Morton Grove, Ill.
OPW Corp., Cincinnati, O.
Smith Bros. Co., Oak Park, Ill.
Snap-Tite, Inc., Union City, Pa.
Swepco Tube Corp., Clifton, N. J.
Vanton Pump & Equipment Corp., Hillside, N. J.
Victaulic Co. of America, Elizabeth, N. J.
Wiggins Oil Tool Co., Inc., E. B., Los Angeles, Calif.
Zalo Mfg. Co., Cleveland, O.

COUPLINGS, TUBING, REFRIGERANT, RUPTURE, FOR INSTALLING FACTORY CHARGED REFRIGERATION EQUIPMENT

Aeroquip Corp., Jackson, Mich.
Anchor Coupling Co., Inc., Libertyville, Ill.

COVERS, PROTECTIVE, VALVE AND FLANGE

Neirad Industries, Inc., Darien, Conn.

COVERS, PROTECTIVE, FOR WINDOW AIR CONDITIONERS

Bemis Bro. Bag Co., St. Louis, Mo.
Blossom Mfg. Co., Inc., Brooklyn, N. Y.
Budlew Products Co., Chicago, Ill.
Canvas Products Co., St. Louis, Mo.
Ero Mfg. Co., Chicago, Ill.
International Covers for Air Conditioners Corp., New York, N. Y.
Tulsa Canvas Products Co., Inc., Tulsa, Okla.
Wagner Awning & Mfg. Co., Cleveland, O.
Wickford Products, Inc., New York, N. Y.

CRANE CAB COOLERS

See Coolers, Crane Cab

CUT-OFFS, LOW WATER, HEATING BOILER

Eclipse Fuel Engineering Co., Rockford, Ill.
Econo Products Company, Inc., Div. of Viking Instruments, Inc., East Haddam, Conn.
General Controls Co., Glendale, Calif. and Skokie, Ill.
Instruments, Inc., Tulsa, Okla.
Johnson Corp., The, Three Rivers, Mich.
Magnetrol Inc., Chicago, Ill.
Maid-O'-Mist, Inc., Chicago, Ill.
McAlear Mfg. Co., Chicago, Ill.
McDonnell & Miller, Inc., Chicago, Ill.
Mercoid Corp., The, Chicago, Ill.
Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.
Morse-Smith-Morse Co., The, Watertown, Mass.
Newark Controls Co., Bloomfield, N. J.
Reliance Gauge Column Co., Cleveland, O.
Schaub Engineering Co., Fred H., Chicago.
Watts Regulator Co., Lawrence, Mass.
Webster & Co., Warren, Camden, N. J.

CUTTERS, FLAME FOR PIPING

H & M Pipe Beveling Machine Co., Tulsa, Okla.
Modern Engineering Co., St. Louis, Mo.
National Cylinder Gas Div., Chemetron Corp., Chicago, Ill.
Orbit Sales Co., Inc., New Haven, Conn.
Steffan Mfg. Corp., Salem, O.
Vernon Tool Co., Ltd., Alhambra, Calif.

CUTTERS, PIPE

American Pipe Tool Co., Chicago, Ill.
Armstrong-Bridgeport Tool Mfg. Corp., Belleville, N. J.
Armstrong Bros. Tool Co., Chicago, Ill.
Baker & Co., R. H., Los Angeles, Calif.
Barnes Tool Co., The, New Haven, Conn.
Beaver Pipe Tools, Inc., Warren, O. (knife and wheel)
Clow & Sons, Inc., James B., Chicago, Ill.
Collins Machinery Corp., Los Angeles, Calif.
Continental Machine Co., Chicago, Ill.
Erie Tool Works, Erie, Pa.
Kalamazoo Tank & Silo Co., Machine Tool Div., Kalamazoo, Mich. (metal cutting band saw)
Kenco Mfg. Co., Los Angeles, Calif. (abrasive)
Landis Machine Co., Inc., Waynesboro, Pa. (roller)
M-M-A, Inc., Lancaster, Pa.
Nye Tool Co., Chicago, Ill.
Obear & Son, W. F., Inglewood, Calif. (abrasive)
Oster Mfg. Co., Wickliffe, O. (portable power)
Pilot Mfg. Co., Torrance, Calif. (asbestos-cement)
Reed Mfg. Co., Erie, Pa.
Ridge Tool Co., Elyria, O.
Sac Tool Mfg. Co., St. Louis, Mo.
Saunders Mfg. Co., Yonkers, N. Y.
Springload Mfg. Corp., Seattle, Wash. (cast iron, clay, asbestos, cement)
Steffan Mfg. Corp., Salem, O.
Talon Tools, Inc., North Arlington, N. J. (chain type)
Toledo Pipe Threading Machine Co., Toledo, O. (wheel, knife)
Trimont Mfg. Co., Div. of St. Pierre Chain Corp., Worcester, Mass. (hand)
Wachs Co., E. H., The, Chicago, Ill. (portable electric and air drive)

CUTTERS, TUBING

Airetool Mfg. Co., Springfield, O.
Anderson Metals Corp., Kansas City, Mo.
Armstrong-Bridgeport Tool Mfg. Corp., Belleville, N. J.
Armstrong Bros. Tool Co., Chicago, Ill.
Bonney Forge & Tool Works, Allentown, Pa.
Chase Brass & Copper Co., Waterbury, Conn.
Chicago Specialty Mfg. Co., Chicago, Ill.
Collins Machinery Corp., Los Angeles, Calif.
Continental Machine Co., Chicago, Ill.
Couplings Co., Chicago, Ill.
Duro Metal Products Co., Chicago, Ill.
Erie Tool Works, Erie, Pa.
Fenway Machine Co., Philadelphia, Pa. (also sheet metal)
Fine Products Co., Berwyn, Ill.
Imperial Brass Mfg. Co., Chicago, Ill.
Kenco Mfg. Co., Los Angeles, Calif. (abrasive)
Landis Machine Co., Inc., Waynesboro, Pa. (roller)
Mueller Brass Co., Port Huron, Mich.
Nye Tool Co., Chicago, Ill.
Obear & Son, W. F., Inglewood, Calif.
Oster Mfg. Co., Wickliffe, O. (portable power)
Parker-Hannifin Corp., Tube & Hose Fittings Div., Cleveland, O.
Penn Brass & Copper Co., Erie, Pa.
Reed Mfg. Co., Erie, Pa.
Ridge Tool Co., Elyria, O.
Sac Tool Mfg. Co., St. Louis, Mo.
Snap-on Tools Corp., Kenosha, Wis.
Talon Tools, Inc., North Arlington, N. J.
Toledo Pipe Threading Machine Co., Toledo, O.
Trimont Mfg. Co., Div. of St. Pierre Chain Corp., Worcester, Mass. (hand)
Wallace Supplies Mfg. Co., Chicago, Ill.
Weatherhead Co., Ft. Wayne Div., Ft. Wayne, Ind.
Wiedeke Co., The Gustav, Dayton, O.
Wilson Manufacturing Co., Memphis, Tenn.

CYLINDERS, AIR OR HYDRAULIC

Airmatic Valve, Inc., Cleveland, O.
Commercial Shearing & Stamping Co., Youngstown, O.
Hanna Engineering Wks., Chicago, Ill.
Ledeen Mfg. Co., El Monte, Calif.
National Tube Div., United States Steel Corp., Pittsburgh, Pa.
Westinghouse Air Brake Co., Industrial Products Div., Wilmerding, Pa.

DAMPERS, AIR, BACK-DRAFT

Air Conditioning Products Co., Detroit, Mich.
American Warming & Ventilating Co., Toledo, O.
Ammerman Co., Inc., Stillwater, Minn.
Elgo Shutter & Mfg. Co., Detroit, Mich.
Excelsior Steel Furnace Co., The, Chicago, Ill.
Jenn-Air Products Co., Indianapolis, Ind.
Jordan & Co., Inc., Paul R., Indianapolis, Ind.
Maple City Furnace Co., Monmouth, Ill.
Senrac Industries, Madison, Wis.
United States Register Co., Battle Creek, Mich.

DAMPER OPERATORS

See Operators, Damper

DAMPER REGULATORS

See Regulators, Damper Sets

DAMPERS, DIFFUSER

Air Devices, Inc., New York, N. Y.
Air Distribution Products Co., Los Angeles, Calif.
Air-Factors, Inc., Monrovia, Calif.
American Warming & Ventilating Co., Toledo, O.
Anemostat Corp. of America, New York, N. Y.
Barber-Colman Co., Rockford, Ill.
Gallaher Co., The, Omaha, Neb.
General Air Products Corp., Cedar Grove, N. J.
Hart & Cooley Mfg. Co., Holland, Mich.
Lima Register Co., Lima, O.
Round Oak Co., Inc., Dowagiac, Mich.
Smith Co., J. B., Philadelphia, Pa.
Titus Mfg. Corp., Waterloo, Ia.
Tuttle & Bailey, Div. of Allied Thermal Corp., New Britain, Conn.
United States Register Co., Battle Creek, Mich.
Young Regulator Co., Cleveland, O.

DAMPERS, DUCT, MANUALLY OPERATED

Adams Co., The, Dubuque, Ia.
Adelta Mfg. Co., Inc., Philadelphia, Pa.
Air Conditioning Products Co., Detroit, Mich.
Air Control Products, Inc., Coopersville, Mich.
Air-Factors, Inc., Monrovia, Calif.
Air-Path Products Co., Baltimore, Md.
Air & Refrigeration Corp., New York, N. Y.
American Foundry & Furnace Co., Bloomington, Ill.
American Warming & Ventilating Co., Toledo.
Ammerman Co., Inc., Stillwater, Minn.
Anemostat Corp. of America, New York.
Arex Co., Chicago, Ill.
Armstrong Fittings Co., Des Moines, Ia.
Atcor, Inc., Warren, Mich.
Barber-Colman Co., Rockford, Ill.
Cain Mfg. Co., Birmingham, Ala.
Champion Furnace Pipe Co., Peoria, Ill.
Controlair Mfg. Co., Los Angeles, Calif.
Corite Products, Inc., Chicago, Ill. (plastic)
Duro-Dyne Corp., Farmingdale, Long Island, N. Y.
Elgo Shutter & Mfg. Co., Detroit, Mich.
Excelsior Steel Furnace Co., Chicago, Ill.
General Air Products Corp., Cedar Grove, N. J.
Hart & Cooley Mfg. Co., Holland, Mich.
Imperial Damper Co., New York, N. Y.
Johnson Service Co., Milwaukee, Wis.
Maple City Furnace Co., Monmouth, Ill.
Marsto Machine Co., West Quincy, Mass.
Minneapolis Honeywell Regulator Co., Industrial Div., Philadelphia, Pa.
Powers Regulator Co., Skokie, Ill.
Rittling Corp., The, Buffalo, N. Y.
Round Oak Co., Inc., Dowagiac, Mich.
Seelye Craftsmen, The, Minneapolis, Minn.
Sioux Steel Co., Sioux Falls, S. D.
Thermotank, Inc., Products Div., Detroit, Mich.
Titus Mfg. Corp., Waterloo, Ia.
Tuttle & Bailey, Div. of Allied Thermal Corp., New Britain, Conn.
United Sheet Metal Co., Inc., Columbus, O.
United States Register Co., Battle Creek, Mich.
Waterloo Register Co., Inc., Waterloo, Ia.
Williamson Co., Cincinnati, O.
Young Regulator Co., Cleveland, O.

DAMPERS, DUCT, REMOTE CONTROLLED

Air-Path Products Co., Baltimore, Md.
Air & Refrigeration Corp., New York, N. Y.
American Foundry & Furnace Co., Bloomington, Ill.
American Warming & Ventilating Co., Toledo.
Anemostat Corp. of America, New York.
Barber-Colman Co., Rockford, Ill.
Buensod-Stacey, Inc., New York, N. Y.
Combustion Equipment Co., Moline, Ill.
Controlair Mfg. Co., Los Angeles, Calif.
Imperial Damper Co., New York, N. Y.
Johnson Service Co., Milwaukee, Wis.
Maple City Furnace Co., Monmouth, Ill.
Minneapolis-Honeywell Regulator Co., Industrial Div., Philadelphia, Pa.
Powers Regulator Co., Skokie, Ill.
Rittling Corp., The, Buffalo, N. Y.
Seelye Craftsmen, The, Minneapolis, Minn.
Thermotank, Inc., Products Div., Detroit, Mich.
Tuttle & Bailey, Div. of Allied Thermal Corp., New Britain, Conn.
Vapor Heating Corp., Chicago, Ill.
Young Regulator Co., Cleveland, O.

DAMPERS, FIRE, FUSIBLE LINK

Air Conditioning Products Co., Detroit, Mich.
Air-Factors, Inc., Monrovia, Calif.
Air-Path Products Co., Baltimore, Md.
American Foundry & Furnace Co., Bloomington, Ill.
American Warming & Ventilating Co., Toledo, O.
Ammerman Co., Inc., Stillwater, Minn.
Anemostat Corp. of America, New York, N. Y.
Arex Co., Chicago, Ill.
Atcor, Inc., Warren, Mich.
Atmos Corp., Chicago, Ill.
Controlair Mfg. Co., Los Angeles, Calif.
Haertel Co., Walter, Minneapolis, Minn.
Imperial Damper Co., New York, N. Y.
Maple City Furnace Co., Monmouth, Ill.
Seelye Craftsmen, The, Minneapolis, Minn.
Senrac Industries, Madison, Wis.
United Sheet Metal Co., Inc., Columbus, O.
United States Register Co., Battle Creek, Mich.
Young Regulator Co., Cleveland, O.

DAMPERS, PULSATION, FOR PIPING SYSTEMS

Campbell Co., J. A., Long Beach, Calif.
Chemiquip Co., New York, N. Y.
Fluor Products Co., Whittier, Calif.
Greer Hydraulics, Inc., Jamaica, N. Y.
International Aer Acoustics, New York.
Taylor Instrument Companies, Rochester, N. Y.
United States Register Co., Battle Creek, Mich.

DEAERATORS

Acker Corp., Meridian, Miss.
Allis-Chalmers Mfg. Co., Milwaukee, Wis.
American-Standard, Ross Heat Exchanger Div., Buffalo, N. Y.
American Water Softener Co., Philadelphia.
Baker, Inc., C. I., Lorain, O.
Belco Industrial Equipment Div., Bogue Electric Mfg. Co., Paterson, N. J.
Cochrane Corp., Philadelphia, Pa.
Condenser Service & Engineering Co., Inc., Hoboken, N. J.
Elgin Softener Corp., Elgin, Ill.
Elliott Co., Jeannette, Pa.
General Filter Co., Ames, Ia.
Graham Mfg. Co., Inc., New York, N. Y.
Graver Water Conditioning Co., New York.
Hoppes Mfg. Co., Inc., Springfield, O.
Permutit Co., Div. of Pfaudler Permutit, Inc., New York, N. Y.
Schaub Engineering Co., Fred H., Chicago.
Sims Co., Erie, Pa.
Stickle Steam Specialties Co., Indianapolis. Ind.
Whitlock Mfg. Co., W. Hartford, Conn.
Worthington Corp., East Orange, N. J.

DEEP WELL PUMPS

See Pumps, Deep Well

DEHUMIDIFIERS, ABSORPTION AND ADSORPTION

Abbeon Supply Co., Jamaica, N. Y.
Air Conditioning Engineering Co., Cambridge, Mass.
Anders-Lykens Corp., Div. of Milton Roy Co., Philadelphia, Pa.
Barnebey-Cheney Co., Columbus, O.
Bryant Mfg. Co., Indianapolis, Ind.
Buffalo Forge Co., Buffalo, N. Y.
Cargocaire Engineering Corp., New York.
Desomatic Products, Inc., Falls Church, Va.
Dow Chemical Co., The, Midland, Mich.
Dryomatic Corp., Alexandria, Va.
Ellis & Watts Products, Inc., Cincinnati, O.
Floridin Co., Tallahassee, Fla.
Kaufman Co., H. J., Detroit, Mich.
Niagara Blower Co., New York, N. Y.
Pittsburgh Lectrodryer Div., McGraw-Edison Co., Pittsburgh, Pa.
Socony-Mobil Oil Co., Inc., New York, N. Y.
Surface Combustion Corp., Toledo, O.
Tamms Industries Co., Chicago, Ill.
Universal Dynamics Corp., Arlington, Va.

DEHUMIDIFIERS FOR COMPRESSED AIR

Adams Co., Inc., R. P., Buffalo, N. Y.
Anders-Lykens Corp., Div. of Milton Roy Co., Philadelphia, Pa.
Bendix Filter Div., Bendix Aviation Corp., Madison Heights, Mich.
Bryant Mfg. Co., Indianapolis, Ind.
Centrifix Corp., Cleveland, O.
Desomatic Products, Inc., Falls Church, Va.
Dryomatic Corp., Alexandria, Va.
Ellis & Watts Products, Inc., Cincinnati, O.
Kaufman Co., H. J., The, Detroit, Mich.
Perfecting Service Co., Charlotte, N. C.
Pittsburgh Lectrodryer Div., McGraw-Edison Co., Pittsburgh, Pa.
Pritchard & Co. of California, J. F., Kansas City, Mo.
Selas Corp. of America, Dresher, Pa.

DEHUMIDIFIERS, ELECTRIC PLUG-IN, FOR SMALL SPACES

Abbeon Supply Co., Jamaica, N. Y.
Admiral Corp., Chicago, Ill.
Blissfield Mfg. Co., Blissfield, Mich.
Cargocaire Engineering Corp., New York, N. Y.
Coolerator Div., McGraw-Edison Co., Albion, Mich.
Dryomatic Corp., Alexandria, Va.
Ebco Mfg. Co., Columbus, O.
Fedders-Quigan Corp., Buffalo, N. Y.
Fresh'nd-Aire Company, Div. of Cory Corp., Chicago, Ill.
Frigid, Inc., Brooklyn, N. Y.
Gibson Refrigerator Co., Greenville, Mich.
Haertel Co., Walter, Minneapolis, Minn.
Mitchell Mfg. Co., Chicago, Ill.
Perfection Industries Div., Hupp Corp., Cleveland, O.
Radio Corp. of America, RCA Victor Div., Camden, N. J.
Remington Air Conditioning Div., Remington Corp., Auburn, N. Y.
Westinghouse Electric Corp., Electric Appliance Div., East Springfield, Mass.
Whirlpool Corp., St. Joseph, Mich.

DEHUMIDIFIERS, SPRAY

See Washers, Air

DEHUMIDIFIERS, SPRAYED COIL

Air & Refrigeration Corp., New York, N. Y.
American Blower Div. of American-Standard, Detroit, Mich.
Blazer & Son, M., Passaic, N. J.
Buensod-Stacey, Inc., New York, N. Y.
Buffalo Forge Co., Buffalo, N. Y.
Carrier Corp., Syracuse, N. Y.
Clarage Fan Co., Kalamazoo, Mich.
Kennard Products, American Air Filter Co., Louisville, Ky.
Marlo Coil Co., St. Louis, Mo.
Trane Co., LaCrosse, Wis.
York Corp., Subsidiary of Borg-Warner Corp., York, Pa.

DEHUMIDIFYING UNITS

See Units, Air Conditioning; Dehumidifiers

DEHYDRANT AND ACID NEUTRALIZER, FOR REFRIGERATING SYSTEMS

Allin Mfg. Co., Chicago, Ill.
Berna Corp., Garwood, N. J.
Grace & Co., W. R., Davison Chemical Div., Baltimore, Md.
Highside Chemicals, Inc., Clifton, N. J.
McIntire Co., The, Livingston, N. J.
Mueller Brass Co., Port Huron, Mich.
Remco, Inc., Zelienople, Pa.

DEHYDRATORS, REFRIGERANT

A-P Controls Div., Controls Co. of America, Milwaukee, Wis.
Aluminum Co. of America, Pittsburgh, Pa.

Ansul Chemical Co., Refrigeration Div., Marinette, Wis.
Berna Corp., Garwood, N. J.
Eagle Chemical Co., Inc., Chicago, Ill.
Fine Products Co., Berwyn, Ill.
Floridin Co., Tallahassee, Fla.
Frigidaire Div., General Motors Corp., Dayton, O.
Henry Valve Co., Melrose Park, Ill.
Imperial Brass Mfg. Co., Chicago, Ill.
Kenmore Machine Products, Inc., Lyons, N. Y.
Kerotest Mfg. Co., Pittsburgh, Pa.
Madden Brass Products Co., Aurora, Ill.
McIntire Co., The, Livingston, N. J.
Mueller Brass Co., Port Huron, Mich.
Refrigeration Research, Inc., Brighton, Mich.
Remco, Inc., **Zelienople, Pa.**
Sealed Unit Parts Co., Inc., New York, N. Y.
Sporlan Valve Co., St. Louis, Mo.
Superior Valve and Fittings Co., Pittsburgh, Pa.
Tube Manifold Corp., North Tonawanda, N. Y.
Union Carbide Chemicals Co., Div. of Union Carbide Corp., New York, N. Y.
Wabash Corp., Chicago, Ill.

DENSIFIERS, CONCRETE, FOR INCREASING THERMAL CONDUCTIVITY

Sonneborn Sons, Inc., L., Building Products Div., New York, N. Y.

DESTROYERS, SOOT, CHEMICAL

Acme Chemical Co., Milwaukee, Wis.
Allen Co., Robert G., Mechanicsville, N. Y.
Ampion Corp., Long Island City, N. Y.
Anderson Chemical Co., Inc., Macon, Ga.
Bird-Archer Co., Philadelphia, Pa.
Black & White Chemical Co., New York, N. Y.
Coughlan Co., G. N., West Orange, N. J.
General Filters, Inc., Novi, Mich.
Hercules Chemical Co., Inc., New York, N. Y.
Kenite Laboratory, Madison, N. J.
Magnus Chemical Co., Garwood, N. J.
Metropolitan Refining Co., Inc., Long Island City, N. Y.
National Aluminate Corp., Chicago, Ill.
Normal Chemical Co., St. Paul, Minn.
North American Mogul Products Co., Cleveland, O. (flue and chimney cleaners)
Nutmeg Chemical Co., New Haven, Conn.
Perolin Co., Inc., New York, N. Y.
S. O. S. Products Co., Inc., Brooklyn, N. Y.
Saverite Engineering Co., Hoboken, N. J.
Smith Chemical Co., E. W., La Puente, Calif.
Tamms Industries Co., Chicago, Ill.
Warren Refining & Chemical Co., The, Cleveland, O.

DESUPERHEATERS, STEAM

Babcock & Wilcox Co., Boiler Div., New York, N. Y.
Bailey Meter Co., Cleveland, O.
Copes-Vulcan Div., Blaw-Knox Co., Erie, Pa.
Foster Wheeler Corp., New York, N. Y.
Hagan Chemicals & Controls, Inc., Pittsburgh, Pa.
Republic Flow Meters Co., Chicago, Ill.
Schutte and Koerting Co., Cornwells Heights, Bucks County, Pa.
Spence Engineering Co., Inc., Walden, N. Y.
Springfield Boiler Co., Springfield, Ill.
Whitlock Mfg. Co., W. Hartford, Conn.

DETECTORS, CARBON MONOXIDE

Bacharach Industrial Instrument Co., Pittsburgh, Pa.
Mine Safety Appliances Co., Pittsburgh, Pa.
Nutt Co., Buell W., Los Angeles, Calif.

DETECTORS, LEAK, FUEL OIL

American Gas & Chemicals, Inc., Leak-Tec Div., New York, N. Y.
Davis Engineering Corp., Elizabeth, N. J.
Mine Safety Appliances Co., Pittsburgh, Pa.
Photobell Co., Inc., New York, N. Y.
Yula Corp., Bronx, N. Y.

DETECTORS, LEAK, PIPING

American Gas & Chemicals, Inc., Leak-Tec Div., New York, N. Y. (gas, hydrogen, nitrogen, oxygen, ammonia; chloride)
Calgon Co., Pittsburgh, Pa.
Met-L-Chek Co., Los Angeles, Calif.
National Aniline Div., Allied Chemical Corp., New York, N. Y.
Universal Controls Corp., Dallas, Tex.
Wilkinson Products Co., Pasadena, Calif.
Winton Products Co., Charlotte, N. C.
Zaco Laboratories, Cleveland, O.

DETECTORS, LEAK, REFRIGERANT

Airserco Mfg. Co., Inc., Pittsburgh, Pa.
Allin Mfg. Co., Chicago, Ill.
American Gas & Chemicals, Inc., Leak-Tec Div., New York, N. Y.
Berns Co., Otto, Rochester, N. Y.
Calgon Co., Pittsburgh, Pa.
Chicago Forging and Mfg. Co., Chicago, Ill.
Davis Instruments, Div. of Davis Emergency Equipment Co., Inc., Newark, N. J.
Devco Engineering, Inc., Control Systems Div., Caldwell, N. J.
General Electric Co., Apparatus Sales Div., Schenectady, N. Y.
Goss Gas, Inc., Glenshaw, Pa.
Highside Chemicals, Inc., Clifton, N. J.
Insto-Gas Corp., Detroit, Mich.
Justrite Mfg. Co., Chicago, Ill.
Kent-Moore Organization, Inc., Warren, Mich.
Lenk Mfg. Co., Franklin, Ky.
Linde Co., Div of Union Carbide Corp., New York, N. Y.
Modern Engineering Co., St. Louis, Mo.
National Cylinder Gas, Div. of Chemetron Corp., Chicago, Ill.
Smith Welding Equipment Corp., Minneapolis.
Turner Brass Wks., Sycamore, Ill.
Vacuum-Electronic Engineering Co., New Hyde Park, L. I., N. Y.
Velocity Power Tool Co., Div. of Mine Safety Appliances Co., Pittsburgh, Pa.
Weldit, Inc., Detroit, Mich.

DETECTORS, LEAK, UNDERGROUND PIPING

Fisher Research Laboratory, Inc., Palo Alto, Calif.
General Electric Co., Apparatus Sales Div., Schenectady, N. Y.
Globe Phone Mfg. Co., Reading, Mass.
Johnson-Williams Inc., Palo Alto, Calif.
Mine Safety Appliance Co., Pittsburgh, Pa.

DETECTORS, SMOKE

See Indicators, Smoke; Alarms, Smoke

DETECTORS, VIBRATION

Instrument Div., Robertshaw-Fulton Controls Co., Philadelphia, Pa.
Scott, Inc., H. H., Inst. Div., Maynard, Mass.

DEVICES, ELECTROLYTIC, FOR PREVENTING CORROSION

American Smelting & Refining Co., Federated Metals Div., New York, N. Y.
Belmont Smelting & Refining Wks., Inc., Brooklyn, N. Y.
Brown-Electro Co., Oklahoma City, Okla.
Division Lead Co., Summit, Ill.
Electro Rust-Proofing Corp., Belleville, N. J.
Engelhard, Inc., Charles, East Newark, N. J.
Harco Corp., Cathodic Protection Div., Cleveland, O.
Magnode Products, Inc., Trenton, O.
Mario Coil Co., St. Louis, Mo.
May Company, Galesburg, Ill.
National Carbon Co., Div. of Union Carbide Corp., New York, N. Y.
Patrol Valve Co., The, Cleveland, O.
Rotometals, San Francisco, Calif.
Steelcote Mfg. Co., St. Louis, Mo.
Wallace & Tiernan Inc., Belleville, N. J.

DEW POINT INDICATORS

See Indicators, Dew Point

DIAPHRAGM VALVES

See Valves, Diaphragm

DIESEL ENGINES

See Engines, Diesel, for Fan, Pump and Compressor Drives

DIFFUSERS, AIR, BASEBOARD

A. & A. Register Co., Cleveland, O.
Air Control Products, Inc., Coopersville, Mich.
Air-Factors, Inc., Monrovia, Calif.
Airfloor Co. of California, Inc., Norwalk, Calif.
Auer Register Co., Cleveland, O.
Coleman Co., Inc., **The, Wichita, Ks.**
Corbman Bros., Inc., Philadelphia, Pa.
General Air Products Corp., Cedar Grove, N. J.
Gerwin Industries, Inc., Michigan City, Ind.
Hart & Cooley Mfg. Co., Holland, Mich.
Heating Assurance, Inc., Spokane, Wash.
Independent Register Co., Cleveland, O.
Kritzer Radiant Coils, Inc., Batavia, Ill.
Lima Register Co., Lima, O.
Midco Register Corp., St. Paul, Minn.
National Grille & Register Co., Cleveland, O.
Rock Island Register Co., Rock Island, Ill.
Smith Co., J. B., Philadelphia, Pa.
Titus Mfg. Corp., Waterloo, Ia.
United States Register Co., Battle Creek, Mich.
Universal Diffuser Corp., Tuckahoe, N. Y.

DIFFUSERS, AIR, CEILING

See also Grilles; Panels, Perforated, for Air Diffusions; Registers

A-J Mfg. Co., Kansas City, Mo.
Air Control Products, Inc., Coopersville, Mich.
Air Devices, Inc., New York, N. Y.
Air Distribution **Products Co., Los Angeles,** Calif.
Air-Factors, Inc., Monrovia, Calif.
Airfan Engineering Co., Los Angeles, Calif.
Anemostat Corp. of America, New York, N. Y.
Ashburn Supply Co., Culver City, Calif.
Auer Register Co., Cleveland, O.
Austin Engineering & Mfg. Co., Inc., Ysleta, Tex.
B-G Engineering Co., Houston, Tex.
Barber-Colman Co., Rockford, Ill.
Carnes Corp., Verona, Wis.
Coleman Co., Inc., The, Wichita, Ks.
Connor Engineering Corp., Danbury, Conn.
Demuth & Sons, Inc., **Charles, Mineola, L. I.,** N. Y.
Gallaher Co., The, Omaha, Neb.
General Air Products Corp., Cedar Grove, N. J.
Hart & Cooley Mfg. Co., Holland, Mich.
Independent Register Co., Cleveland, O.
Krueger Air Conditioning Co., Tucson, Ariz.
Lenly Mfg. Co., Inc., Los Angeles, Calif.
Lima Register Co., The, Lima, O.
Midco Register Corp., St. Paul, Minn.
Multi-Vent Div., **Pyle-National Co., The, Chicago,** Ill.
Smith Co., J. B., Philadelphia, Pa.
Titus Mfg. Corp., Waterloo, Ia.
Tuttle & Bailey, Div. of Allied Thermal Corp., New Britain, Conn.
United States Register Co., Battle Creek, Mich.
Universal Diffuser Corp., Tuckahoe, N. Y.
Young Regulator Co., Cleveland, O.

DIFFUSERS, AIR, CEILING WITH COMBINED LIGHTING FIXTURE

Air Devices, Inc., New York, N. Y.
Air-Factors, Inc., Monrovia, Calif.
Anemostat Corp. of America, New York.
Barber-Colman Co., Rockford, Ill.
Carnes Co., Verona, Wis.
Connor Engineering Corp., Danbury, Conn.
Demuth & Sons, Inc., **Charles, Mineola, L. I.,** N. Y.
Multi-Vent Div., Pyle-National Co., The, Chicago, Ill.
Titus Mfg. Corp., Waterloo, Iowa.
Tuttle & Bailey, Div. of Allied Thermal Corp., New Britain, Conn.
Universal Diffuser Corp., Tuckahoe, N. Y.
Wakefield Co., The, Vermilion, O.

DIFFUSERS, AIR, FLOOR

A. & A. Register Co., Cleveland, O.
A-J Mfg. Co., Kansas City, Mo.
Air Control Products, Inc., Coopersville, Mich.
Air Devices, Inc., New York, N. Y.
Anemostat Corp. of America, New York, N. Y.
Auer Register Co., Cleveland, O.
Coleman Co., Inc., **The, Wichita, Ks.**
Hart & Cooley Mfg. Co., Holland, Mich.
Independent Register Co., Cleveland, O.

Knowles Mushroom Ventilator Co., Upper Montclair, N. J.
Lenly Mfg. Co., Inc., Los Angeles, Calif.
Lima Register Co., Lima, O.
Ritter Pattern & Casting Co., Inc., New York.
Rock Island Register Co., Rock Island, Ill.
Smith Co., J. B., Philadelphia, Pa.
Titus Mfg. Corp., Waterloo, Ia.
United States Register Co., Battle Creek, Mich.
Universal Diffuser Corp., Tuckahoe, N. Y.

DIFFUSERS, AIR, HIGH PRESSURE

Air Devices, Inc., New York, N. Y.
American Warming & Ventilating Co., Toledo, O.
Anemostat Corp. of America, New York, N. Y.
Barber-Colman Co., Rockford, Ill.
Coleman Co., Inc., The, Wichita, Ks.
Connor Engineering Corp., Danbury, Conn.
Independent Register Co., Cleveland, O.
Lima Register Co., Lima, O.
Thermotank, Inc., Products Div., Detroit, Mich.
Titus Mfg. Corp., Waterloo, Iowa
Tuttle & Bailey, Div. of Allied Thermal Corp., New Britain, Conn.
Universal Diffuser Corp., Tuckahoe, N. Y.

DIFFUSERS, AIR, WALL

A. & A. Register Co., Cleveland, O.
A-J Mfg. Co., Kansas City, Mo.
Air Control Products, Inc., Coopersville, Mich.
Air Devices, Inc., New York, N. Y.
Air Distribution Products Co., Los Angeles.
Air-Factors, Inc., Monrovia, Calif.
American Warming & Ventilating Co., Toledo, O.
Anemostat Corp. of America, New York, N. Y.
Auer Register Co., Cleveland, O.
Barber-Colman Co., Rockford, Ill.
Bowman Inc., D. F., Clearwater, Fla.
Coleman Co., Inc., The, Wichita, Ks.
Demuth & Sons, Inc., Charles, Mineola, L. I., N. Y.
General Air Products Corp., Cedar Grove, N. J.
Hart & Cooley Mfg. Co., Holland, Mich.
Independent Register Co., Cleveland, O.
Lenly Mfg. Co., Inc., Los Angeles, Calif.
Lima Register Co., Lima, O.
Midco Register Corp., St. Paul, Minn.
National Grille & Register Co., Cleveland, O.
Rock Island Register Co., Rock Island, Ill.
Smith Co., J. B., Philadelphia, Pa.
Thermotank, Inc., Products Div., Detroit, Mich.
Titus Mfg. Corp., Waterloo, Ia.
United States Register Co., Battle Creek, Mich.
Universal Diffuser Corp., Tuckahoe, N. Y.

DIFFUSION, AIR

See Panels, Perforated, for Air Diffusion

DISTRIBUTORS, REFRIGERANT, FOR COOLING COILS

General Controls Co., Glendale, Calif.
Refrigeration Research, Inc., Brighton, Mich.
Sporlan Valve Co., St. Louis, Mo.

DISTRIBUTORS, WATER, FOR CONDENSERS

Hubbell Corp., Mundelein, Ill.
Vilter Mfg. Co., The, Milwaukee, Wis.

DOOR CONTROLS

See Controls, Door, Electric Eye

DOOR GRILLES

See Grilles, Door

DOORS AND PANELS, ACCESS

Adams Co., The, Dubuque, Ia.
Air-Path Products Co., Baltimore, Md.
Air & Refrigeration Corp., New York, N. Y.
American Metal Works, Inc., New Orleans, La.
Ammerman Co., Inc., Stillwater, Minn.
Auer Register Co., Cleveland, O.
Biersach & Niedermeyer Co., Milwaukee, Wis.
Camloc Fastener Corp., Paramus, N. J. (Fasteners for access panels and sheet metals)
Carey Mfg. Co., Philip, Lockland, Cincinnati, O.
Clarage Fan Co., Kalamazoo, Mich.
Falstrom Co., Passaic, N. J.
Haertel Co., Walter, Minneapolis, Minn.
Inland Steel Products Co., Milwaukee, Wis.
Knapp Bros. Mfg. Co., Cincinnati, O.
Lumm Co., A. H., Toledo, O.
Technical Ply-Woods Sales, Chicago, Ill.
Ventfabrics, Inc., Chicago, Ill.
Walsh Co., L. M., The, Boston, Mass.
Western Wire & Iron Works, Inc., Chicago, Ill. (Metal)
Zurn Industries, Inc., Erie, Pa.

DOORWAYS, AIR CURTAIN, FOR LARGE ENTRANCES

(Including nozzles, fans, ducts, heating and cooling coils, etc.)

American Air Curtain Corp., St. Louis, Mo.
Dunham-Bush, Inc., West Hartford, Conn.
New Castle Products, Inc., New Castle, Ind.

DOUBLE DUCT MIXING UNITS, SOUND AND VOLUME CONTROL, FOR AIR CONDITIONING SYSTEMS

See Units, Mixing, Sound and Volume Control, for Double Duct High Velocity Air Conditioning Systems

DRAFT CONTROL

See Controls, Draft, Barometric; Regulators, Draft, Combustion

DRAFT GAGES

See Gages, Indicating, Draft

DRAFT RECORDERS

See Recorders, Draft

DRAFT REGULATORS

See Controls, Draft, Barometric; Regulators, Draft, Combustion

DRAINS, TANK, FOR HOT WATER HEATING SYSTEM EXPANSION TANKS

Econo Products Co., Inc., Div. of Viking Instruments, Inc., East Haddam, Conn.
Quality Specialty Co., Inc., Camden, N. J.
Richmond Engineering Co., Richmond, Va.
Thrush & Co., H. A., Peru, Ind.

DRAWING TEMPLATES, PIPING

See Templates, Drawing, Piping

DRIERS

See Dehydrators, Refrigerant

DRILLS, ELECTRIC AND PNEUMATIC, PORTABLE

Airetool Mfg. Co., Springfield, O.
Albertson & Co., Inc., Sioux City, Ia.
Black & Decker Mfg. Co., Towson, Md.
Buckeye Tools Corp., Dayton, O.
Chicago Pneumatic Tool Co., New York, N. Y.
Clizbe Bros. Mfg. Co., Plymouth, Ind.
Dayton Electric Mfg. Co., Chicago, Ill.
Demo-Haines Tool Corp., El Segundo, Calif.
Gardner-Denver Co., Quincy, Ill.
Hamer-Dril Co., New York, N. Y.
Hydrauger Corp., Ltd., San Francisco, Calif.
Ingersoll-Rand Co., New York, N. Y.
Joy Mfg. Co., Pittsburgh, Pa.
Mall Tool Co., Div. of Remington Arms Co., Inc., Chicago, Ill.
Millers Falls Co., Greenfield, Mass.
Milwaukee Electric Tool Corp., Milwaukee, Wis.
Molco Drilling Machines, Inc., Washington, D.C.
Nielsen, Inc., E. V., Stamford, Conn.
Oster Mfg. Co., John, Milwaukee, Wis.
Portable Electric Tools, Inc., Chicago, Ill.
Porter-Cable Machine Co., Syracuse, N. Y.
Rotor Tool Co., Cleveland, O.
Schramm, Inc., West Chester, Pa.
Skil Corp., Chicago, Ill.
Snap-on Tools Corp., Kenosha, Wis.
Speedway Mfg. Co., Div. of Thor Power Tool Co., Chicago (Cicero), Ill.
Stanley Electric Tools, Div. of The Stanley Works, New Britain, Conn.
Stanley Works, The, New Britain, Conn.
Tempo Products Co., Cleveland, O.
Thor Power Tool Co., Aurora, Ill.
Truco Masonry Drilling Div., Wheel Trueing Tool Co., Detroit, Mich.
U. S. Electrical Tool Co., Cincinnati, O.
Wodack Electric Tool Corp., Chicago, Ill.
Worthington Corp., East Orange, N. J.

DRILLS, MASONRY

Arro Expansion Bolt Co., Marion, O.
Atlas Copco Eastern, Inc., Paramus, N. J.
Chicago Expansion Bolt Co., Chicago, Ill.
Chicago Pneumatic Tool Co., New York, N. Y.
Demo-Haines Tool Corp., El Segundo, Calif.
Diamond Expansion Bolt Co., Inc., Garwood, N. J.
Diamond Products, Inc., Elyria, O.
DoAll Co., The, Des Plaines, Ill.
Greenfield Tap & Die Div. of United Greenfield Corp., Greenfield, Mass.
Hamlin Co., Inc., J. F., San Francisco, Calif.
Holub Industries, Inc., Sycamore, Ill.
Ideal Industries, Inc., Sycamore, Ill.
Joy Mfg. Co., Pittsburgh, Pa.
Mall Tool Co., Div. of Remington Arms Co., Inc., Chicago, Ill.
Metallurgical Products Dept. of General Electric Co., Detroit, Mich.
Molco Drilling Machines, Inc., Washington, D. C.
New England Carbide Tool Co., Inc., Medford, Mass. (portable drilling machines)
Nielsen, Inc., E. V., Stamford, Conn.
Paine Co., Addison, Ill.
Phillips Drill Co., Michigan City, Ind.
Polis Mfg. Co., Div. of Gregory Industries, Lorain, O.
Proto Tool Co., Div. of Pendleton Tool Industries, Inc., Los Angeles, Calif.
Rawlplug Co., Inc., The, New Rochelle, N. Y.
Schramm, Inc., West Chester, Pa.
Star Expansion Industries Corp., Mountainville, N. Y.
Super Tool Co., Detroit, Mich.
Tempo Products Co., Cleveland, O.
Termite Drills, Inc., Pasadena, Calif.
Thor Power Tool Co., Aurora, Ill.
Threadwell Tap & Die Co., Greenfield, Mass.
Truco Masonry Drilling Div., Wheel Trueing Tool Co., Detroit, Mich.
U. S. Expansion Bolt Co., York, Pa.
Williams & Co., J. H., Buffalo, N. Y.
Wodack Electric Tool Corp., Chicago, Ill.

DRIVES, CHAIN

Boston Gear Works, Quincy, Mass.
Browning Mfg. Co., Maysville, Ky.
Chain Belt Co., Milwaukee, Wis.
Dodge Mfg. Corp., Mishawaka, Ind.
Ft. Worth Steel & Machinery Co., Ft. Worth, Tex.
Jeffrey Mfg. Co., Columbus, O.
Link Belt Co., Chicago, Ill.
Maurey Mfg. Corp., Chicago, Ill.
Morse Chain Co., Ithaca, N. Y.
Ramsey Products Corp., Albany, N. Y.
Valley Foundry & Machine Works, Inc., Fresno, Calif.
Whitney Chain Co., Hartford, Conn.

DRIVES, COOLING TOWER FAN

Cleveland Worm & Gear Co., Cleveland, O.
Cone-Drive Gears Div., Michigan Tool Co., Detroit, Mich.
Doerr Electric Corp., Cedarburg, Wis.
Kalamazoo Div., New York Air Brake Co., Kalamazoo, Mich.
Master Electric Co., Div. of Reliance Electric & Engineering Co., Dayton, O.
Philadelphia Gear Corp., Philadelphia, Pa.

DRIVES, FLAT BELT

See also Belting, Leather and Belting, Rubber

American Pulley Co., Philadelphia, Pa.
Boston Woven Hose & Rubber Co., Div. of American Biltrite Rubber Co., Cambridge, Mass.
Browning Mfg. Co., Maysville, Ky.
Chicago Die Casting Mfg. Co., Chicago, Ill.
Dodge Mfg. Corp., Mishawaka, Ind.
New York Belting & Packing Co., Passaic, N. J.

Pyott Foundry & Machine Co., Aurora, Ill.
Rhoads & Sons, J. E., Wilmington, Del.
Williams & Son, I. B., Dover, N. H.
Wood's Sons Co., T. B., Chambersburg, Pa.

DRIVES, FLUID OR HYDRAULIC, FOR POWER TRANSMISSION

American Blower Div. of American-Standard, Detroit, Mich.
Dodge Mfg. Corp., Mishawaka, Ind.
Kalamazoo Div., New York Air Brake Co., Kalamazoo, Mich.
Link Belt Co., Chicago, Ill.
Sundstrand Hydraulic Div., Rockford, Ill.
Twin Disc Clutch Co., Rockford, Ill.
Warner Electric Brake & Clutch Co., Beloit, Wis.
Will-O-Hill Industries, Inc., Willoughby, O
Zurn Industries, Inc., Erie, Pa.

DRIVES, GEAR

Boston Gear Works, Quincy, Mass.
Brooke Engineering Co., Inc., Philadelphia, Pa.
Cleveland Worm & Gear Co., Cleveland, O.
Cone-Drive Gears Div., Michigan Tool Co., Detroit, Mich.
Falk Corp., Milwaukee, Wis.
Hewitt-Robins, Inc., Stamford, Conn.
Lima Electric Motor Co., Inc., The, Lima, O.
Link-Belt Co., Chicago, Ill.
Lovejoy Flexible Coupling Co., Chicago, Ill.
Master Electric Co., Div. of Reliance & Engineering Co., Dayton, O.
Philadelphia Gear Corp., Philadelphia, Pa.
Pyott Foundry & Machine Co., Aurora, Ill.
Reliance Electric Engineering Co., Cleveland, O.
U. S. Electrical Motors, Inc., Los Angeles, Calif.

DRIVES, POWER FOR PIPE THREADING

Beaver Pipe Tools, Inc., Warren, O.
Oster Mfg. Co., Wickliffe, O.
Ridge Tool Co., Elyria, O.
Toledo Pipe Threading Machine Co., Toledo, O.

DRIVES, SHAFT MOUNTED

American Pulley Co., The, Philadelphia, Pa.
Cone-Drive Gears Div., Michigan Tool Co., Detroit, Mich.
Dodge Mfg. Corp., Mishawaka, Ind.
Falk Corp., Milwaukee, Wis.
Hewitt-Robins, Inc., Stamford, Conn.
Link-Belt Co., Chicago, Ill.
Lovejoy Flexible Coupling Co., Chicago, Ill.
Philadelphia Gear Corp., Philadelphia, Pa.
Salsbury Corp., Los Angeles, Calif.

DRIVES, V BELT

Allis-Chalmers Mfg. Co., Milwaukee, Wis. (constant and adjustable speed)
American Pulley Co., Philadelphia, Pa.
Boston Woven Hose & Rubber Co., Div. of American Biltrite Rubber Co., Cambridge, Mass.
Browning Mfg. Co., Maysville, Ky.
Chicago Die Casting Mfg. Co., Chicago, Ill.
Congress Drives Div., Tann Corp., Detroit, Mich.
Dayton Rubber Co., Dayton, O.
Dodge Mfg. Corp., Mishawaka, Ind.
Durkee-Atwood Co., Minneapolis, Minn.
Ft. Worth Steel & Machinery Co., Ft. Worth, Tex.
Gates Rubber Co., The, Denver, Colo.
Goldens' Foundry & Machine Co., Columbus, Ga.
Hewitt-Robins, Inc., Stamford, Conn.
Horton Mfg. Co., Minneapolis, Minn.
Jones Machinery Div., Hewitt-Robins, Inc., Chicago, Ill.
Link-Belt Co., Chicago, Ill.
Lovejoy Flexible Coupling Co., Chicago, Ill.
Maurey Mfg. Corp., Chicago, Ill.
New York Belting & Packing Co., Passaic, N. J.
Pyott Foundry & Machine Co., Aurora, Ill.
Speed Selector Inc., Chagrin Falls, O.
Utility Fan Corp., Div. of Utility Appliance Corp., Los Angeles, Calif.
V-Belt Clutch Co., Los Angeles, Calif.
Wood's Sons Co., T. B., Chambersburg, Pa.
Worthington Corp., East Orange, N. J.

DRIVES, VARIABLE SPEED

See Changers, Speed, Hydraulic Coupling; Changers, Speed, Mechanical; Reducers, Speed; Pulleys and Sheaves, for Belt Drives

DRYERS FOR COMPRESSED AIR

See Dehumidifiers for Compressed Air

DRYERS, INDUSTRIAL (COMPARTMENT, TUNNEL CONVEYOR, VACUUM, SPRAY, ROTARY, ETC.)

Aerotec Corp., The, Greenwich, Conn.
Air & Refrigeration Corp., New York, N. Y.
Beltran Associates, Inc., Brooklyn, N. Y.
Biggs Boiler Works Co., The, E. Akron, O.
Blaw Knox Co., Buflovak Equipment Div., Buffalo. N. Y.
Bowen Engineering, Inc., North Branch, N. J.
Combustion Engineering Inc., New York, N. Y.
Day Co., The, Minneapolis, Minn.
Dean Thermo-Panel Coil Div., Dean Products, Inc., Brooklyn, N. Y.
Devine Mfg. Co., Inc., J. P., Pittsburgh, Pa.
Dryer Electric Corp., Fan Div., Brooklyn, N.Y.
Drying Systems Co., Chicago, Ill.
Griffin & Co., Louisville, Ky.
Jeffrey Mfg. Co., Columbus, O.
Kirk & Blum Mfg. Co., Cincinnati, O.
Link-Belt Co., Chicago, Ill.
Louisville Drying Machinery Unit, General American Transportation Corp., Louisville, Ky.
Mahon Co., R. C., The, Detroit, Mich.
Manitowoc Shipbuilding, Inc., Manitowoc, Wis. (rotary)
Newcomb-Detroit Co., Detroit, Mich.
Niagara Blower Co., New York, N. Y.
Peters-Dalton, Inc., Detroit, Mich.
Proctor & Schwartz, Inc., Philadelphia, Pa.
Raymond Div., Combustion Engineering Inc., Chicago, Ill.
Ross Engineering Div., J. O., Midland-Ross Corp., New York, N. Y.
Schmieg Industries, Inc., Detroit, Mich.
Universal Dynamics Corp., Arlington, Va.
Valley Foundry & Machine Works, Inc., Fresno, Calif.
Western Precipitation Corp., Los Angeles, Calif.
Whiting Corp., Harvey, Ill.
Wiegand Co., Edwin L., Pittsburgh, Pa. (electric)

DRYERS, REFRIGERANT

See Dehydrators, Refrigerant

DUAL THERMOSTATS

See Thermostats, Two Temperature or Dual

DUCT CONNECTIONS

See Connections, Duct, Flexible; Connectors for Non-Metallic Duct Fabrication

DUCT FURNACES

See Heaters, Duct

DUCT HANGING CLAMPS

See Clamps, Beam, Duct Hanging

DUCT HEATERS

See Heaters, Duct

DUCT INSULATION

See Insulation, Duct

DUCT REPAIR KITS

See Kits, Repair for Pipes, Tanks, Valves, Flanges, and ducts

DUCT SILENCERS

See Absorbers, Sound, Duct Section, Prefabricated, for Noise Control in Duct Systems; Insulation, Duct, Sound Deadening

DUCT TAPE

See Tape, Duct, Adhesive, for Sealing Joints

DUCT THERMOSTATS

See Thermostats, Duct Type

DUCT TURNING VANES

See Vanes, Duct Turning, Prefabricated

DUCTS AND DUCT FITTINGS, PREFABRICATED, FLEXIBLE, METALLIC

American Metal Hose Div., The American Brass Co., Waterbury, Conn.
Arrowhead Products, Div. of Federal-Mogul-Bower Bearings, Inc., Long Beach, Calif.
Buckeye Furnace Pipe Co., Columbus, O.
Coleman Co., Inc., The, Wichita, Kans.
Flexonics Corp., Maywood, Ill.
Littleford Bros., Inc., Cincinnati, O.
Round Oak Co., Inc., Dowagiac, Mich.
Solar Aircraft Co., San Diego, Calif.
U. S. Flexible Metallic Tubing Co., Los Angeles, Calif.

DUCTS AND DUCT FITTINGS, PREFABRICATED, FLEXIBLE, NON-METALLIC

American Agile Corp., Bedford, O.
Arrowhead Products, Div. of Federal-Mogul-Bower Bearings, Inc., Long Beach, Calif.
Duro-Dyne Corp., Farmingdale, Long Island, N. Y.
Flexaust Co., New York, N. Y.
Flexible Tubing Corp., Guilford, Conn.
United States Rubber Co., New York, N. Y.
Wiremold Co., Hartford, Conn.

DUCTS AND DUCT FITTINGS, PREFABRICATED, NON-FLEXIBLE, METALLIC

Acer & Whedon, Inc., Medina, N. Y.
Airfloor Co. of California, Inc., Norwalk, Calif.
Armstrong Fittings Co., Des Moines, Ia.
Beckett & Co., Inc., Thomas, Dallas, Tex.
Champion Furnace Pipe Co., Peoria, Ill.
Clayton & Lambert Mfg. Co., Louisville, Ky.
Corbman Bros., Inc., Philadelphia, Pa.
Ervite Corp., Erie, Pa. (enamel lined or glass coated for corrosive fume removal systems)
Excelsior Steel Furnace Co., The, Chicago, Ill.
General Metals, Inc., Greensboro, N. C.
Henry Furnace Co., The, Medina, O.
Inland Steel Products Co., Milwaukee, Wis.
Lennox Industries Inc., Columbus, O.
Lennox Industries Inc., Marshalltown, Ia.
Meyer & Bro. Co., F., Peoria, Ill.
Middlesex Paper Tube Co., Inc., Lowell, Mass. (impregnated paper tubes)
Mueller Climatrol, Div of Worthington Corp., Milwaukee, Wis.
Norwalk Air Conditioning Corp., S. Norwalk, Conn.
Olsen Mfg. Co., C. A., Elyria, O.
Portland Copper & Tank Wks., Inc., South Portland, Me. (stainless steel)
Pressure Airduct Corp., Skokie, Ill. (for high velocity systems)
United Sheet Metal Co., Inc., Columbus, O.
United States Register Co., Battle Creek, Mich.
Williamson Co., Cincinnati, O.

DUCTS AND DUCT FITTINGS, PREFABRICATED, NON-FLEXIBLE, NON-METALLIC

American Agile Corp., Bedford, O.
Argo Plastic Products, Cleveland, O.
Atlas Mineral Products Co., Mertztown, Pa.
Ceilcote, Inc., Cleveland, O.
Coleman Co., Inc., The, Wichita, Ks.
Colonial Plastics Mfg. Co., Industrial Div., Cleveland, O. (Unplasticized polyvinyl chloride)
Corite Products, Inc., Chicago, Ill. (plastic)
DuVerre, Inc., Buffalo, N.Y. (polyester bonded fiber glass)
General Ceramics Corp., Keasbey, N. J. (plastic)
Goethel Sheet Metal Wks., Inc., Alfred, Milwaukee, Wis.
Goodrich Industrial Products Co., B. F., Akron, O.
Hamilton Rubber Mfg. Corp., Trenton, N. J.
Haveg Industries, Inc., Wilmington, Del. (for fumes)
Heil Process Equipment Corp., Cleveland, O.
Industrial Plastic Fabricators, Norwood, Mass. (PVC & polyethylene)
Johns-Manville, New York, N. Y.

Keasbey & Mattison Co., Ambler, Pa. (asbestos — cement pipe)
Knight, Maurice A., Akron, O. (acid-proof)
Met-L-Wood Corp., Chicago, Ill. (combination wood and sheet metal)
Molded Fiber Glass Sheet Co., Ashtabula, O.
Owens-Corning Fiberglas Corp., Toledo, O.
Richkraft Co., Chicago, Ill.
Robinson Clay Product Co., The, Akron, O.
S & C Mfg. Co., Cincinnati, O. (plastic)
Sonoco Products Co., Construction Products Div., Hartsville, S. C.
Straitsville Brick Co., New Straitsville, O.
United States Rubber Co., New York, N. Y.
Woodall Industries, Inc., Detroit, Mich.

DUCTS, FLEXIBLE

See Ducts and Duct Fittings, Prefabricated, Flexible, Non-Flexible, Metallic and Non-Metallic

DUCTS, SPIRAL WELDED

Carrier Corp., Syracuse, N.Y.
United Sheet Metal Co., Columbus, O.
Worthington Corp., East Orange, N. J.
York Corp., Subsidiary of Borg-Warner Corp., York, Pa.

DYE PENETRANT

See Penetrant, Dye

DUST BAGS FOR DUST COLLECTORS

See Bags, Dust, for Dust Collectors

DUST COLLECTORS

See Collectors, Dust

DUST COUNTERS

See Counters, Dust

ECONOMIZERS, FUEL

Babcock & Wilcox Co., Boiler Div., New York, N. Y.
Bros, Inc., Minneapolis, Minn.
Buxton Mfg. Co., Dover, N. J.
Combustion Engineering Inc., New York.
Condenser Service & Engineering Co., Inc., Hoboken, N. J.
Ellicott Fabricators, Inc., Baltimore, Md.
Foster Wheeler Corp., New York, N. Y.
Green Fuel Economizer Co., Inc., The, Beacon, N. Y.
Old Dominion Iron & Steel Corp., Richmond, Va.
Richmond Engineering Co., Richmond, Va.
Springfield Boiler Co., Springfield, Ill.
Union Iron Works, Erie, Pa.

EJECTORS, SEWAGE

American-Marsh Pumps, Inc., Battle Creek, Mich.
Chicago Pump Co., Subsidiary of Food Machinery & Chemical Corp., Chicago, Ill.
Condenser Service & Engineering Co., Inc., Hoboken, N. J.
Davidson Co., M. T., New York, N. Y.
Nash Engineering Co., South Norwalk, Conn.
Penberthy Mfg. Co., Div. of Buffalo Eclipse Corp., Detroit, Mich.
Swaby Mfg. Co., Chicago, Ill.
Weil Pump Co., Chicago, Ill.
Wheeler Mfg. Co., C. H., Economy Pump Div., Philadelphia, Pa.
Whittington Pump & Engineering Corp., Indianapolis, Ind.
Worthington Corp., East Orange, N. J.
Yeomans Bros. Co., Melrose Park, Ill.

ELBOWS AND TEES, BALANCING, FOR HOT WATER HEATING AND CHILLED WATER SYSTEMS

Bernstrom, Inc., C. R., Providence, R. I.
Detroit Controls, Div. of American-Standard, Detroit, Mich.
Dunham-Bush, Inc., West Hartford, Conn.
Hammond Valve Corp., Hammond, Ind.
Hoffman Specialty Mfg. Corp., Indianapolis.
Kehm Corp., The, Chicago, Ill.
New York Brass Foundry, New York, N. Y.
Sarco Co., Inc., New York, N. Y.
Sarcotherm Controls, Inc., New York, N. Y.
Thrush & Co., H. A., Peru, Ind.
Welsbach Corp., The, Kitson Valve Div., Philadelphia, Pa.

ELECTRIC AIR CLEANERS

See Filters, Air, Electrostatic (with outside power source)

ELECTRIC BOILERS AND STEAM GENERATORS

See Generators, Steam, Electric

ELECTRIC DRILLS

See Drills, Electric, Portable

ELECTRIC MOTORS

See Motors, Electric

ELECTRIC PIPE HEATING SYSTEMS

See Systems, Electric Pipe Heating

ELECTRIC RADIANT HEATING

See Panels, Electric Heating

ELECTRIC SHEARS

See Shears, Electric, Portable

ELECTRIC UNIT HEATERS

See Heaters, Unit, Electric Heating Element

ELECTRICAL AIR FILTERS

See Filters, Air, Electrostatic (with outside power source)

ELECTRODES, ARC WELDING

Air Reduction Sales Co., A Div. of Air Reduction Co., Inc., New York, N. Y.
All-State Welding Alloys Co., Inc., White Plains, N. Y.
Allegheny Ludlum Steel Corp., Pittsburgh, Pa. (Stainless)
Allied Weld-Craft, Inc., Indianapolis, Ind.
Alloy Rods Co., York, Pa.
American Brass Co., Waterbury, Conn.
Ampco Metals, Inc., Milwaukee, Wis.
Arcos Corp., Philadelphia, Pa.
Biersach & Niedermeyer Co., Milwaukee, Wis.
Burdett Oxygen Co. of Calif., Huntington Park, Calif.
Central Steel & Wire Co., Chicago, Ill.
Crucible Steel Co. of America, Pittsburgh, Pa.
Eutectic Welding Alloys Corp., Flushing, N. Y.
Harnischfeger Corp., Milwaukee, Wis.
Hobart Bros. Co., Troy, O.
Haynes Stellite Co., Div. of Union Carbide Corp., New York, N. Y.
International Nickel Co., Inc., The, New York, N. Y.
Lincoln Electric Co., Cleveland, O.
Linde Co., Div. of Union Carbide Corp., New York, N.Y.
Marquette Mfg. Co., Inc., Minneapolis, Minn.
Maurath, Inc., Cleveland, O.
McKay Co., Pittsburgh, Pa.
Metal & Thermit Corp., Rahway, N. J.
Miller Electric Mfg. Co., Inc., Appleton, Wis.
Mir-O-Col Alloy Co., Inc., Los Angeles, Calif. (for hard facing)
National Carbon Co., Div. of Union Carbide Corp., New York, N. Y.
National Cylinder Gas, Div. of Chemetron Corp., Chicago, Ill.
Sight Feed Generator Co., West Alexandria, O.
Smith Corp., A. O., Milwaukee, Wis.
Trindl Products, Ltd., Chicago, Ill.
Victor Equipment Co., Welding Equipment Div., San Francisco, Calif.
Weldit, Inc., Detroit, Mich.
Westinghouse Electric Corp., Pittsburgh, Pa.

ELECTRODES, OIL BURNER

Auburn Sparkplug Co., Inc., Auburn, N. Y.
Crown Engineer Corp., Keyport, N. J.
Dielectric Products Co., Inc., Jersey City, N. J.
Steinen Mfg. Co., Wm., Newark, N. J.

ELECTROSTATIC AIR FILTERS

See Filters, Air, Electrostatic (with outside power source)

ELIMINATORS, AIR, FOR HEATING AND PIPING SYSTEMS

Anderson Co., V. D., The, Div. of International Basic Economy Corp., Cleveland, O.
Armstrong Machine Works, Three Rivers, Mich.
Baseline Mfg. Corp. of Fla., St. Petersburg, Fla.
Bell & Gossett Co., Morton Grove, Ill.
Dole Valve Co., The, Morton Grove, Ill.
Domestic Pump & Mfg. Corp., Shippensburg, Pa.
Dunham-Bush, Inc., West Hartford, Conn.
Econo Products Co., Inc., Div. of Viking Instruments, Inc., East Haddam, Conn.
General Automatic Products Corp., Baltimore, Md.
Gorton Heating Corp., Cranford, N. J.
Granberg Corp., Oakland, Calif.
Heat-Timer Corp., New York, N. Y.
Hoffman Specialty Mfg. Corp., Indianapolis, Ind.
Illinois Engineering Products, American Air Filter Co., Inc., Louisville, Ky.
Kaye & McDonald, Inc., West Orange, N. J.
Keeney Mfg. Co., Newington, Conn.
Maid-O'-Mist, Inc., Chicago, Ill.
Marsh Heating Equipment Co., Skokie, Ill.
McAlear Mfg. Co., Chicago, Ill.
Moreheat Distribution, Inc., Cincinnati, O.
Multiplex Mfg. Co., Berwick, Pa.
New York Air Valve Corp., Brooklyn, N. Y.
Quality Specialty Co., Inc., Camden, N. J.
Sarco Co., Inc., New York, N. Y.
Sarcotherm Controls, Inc., New York, N. Y.
Southern Plastics Co., Columbia, S. C.
Squires Co., C. E., The, Cleveland, O.
Taco Heaters, Inc., Cranston, R. I.
Thrush & Co., H. A., Peru, Ind.
Trane Co., The, La Crosse, Wis.
Triplex Heating Specialty Co., Inc., Peru, Ind.
Webster & Co., Warren, Camden, N. J.

ELIMINATORS, SLUG, REFRIGERANT

Blazer & Son, M., Passaic, N. J.
Patterson-Kelley Co., The, East Stroudsburg, Pa.
Southern Plastics Co., Columbia, S. C.
Watkins Co., J. E., Maywood, Ill.

ENAMELS AND LACQUERS

Acorn Refining Co., Cleveland, O.
Arco Co., The, Cleveland, O.
Barreled Sunlight Paint Co., Providence, R. I.
Barrett Div., Allied Chemical & Dye Corp., New York, N. Y. (pipeline and waterworks enamels)
Blue Ridge Talc Co., Inc., Henry, Va.
Claronex Products, Inc., Brooklyn, N. Y.
Cordo Chemical Corp., Norwalk, Conn.
Corrosion Control Co., Inc., New York, N. Y.
Debevoise Co., The, Brooklyn, N. Y.
Dennis Chemical Co., St. Louis, Mo.
Dixon Crucible Co., Joseph, Jersey City, N. J.
du Pont de Nemours & Co., E. I., Finishes Div., Wilmington, Del.
General Paint Corp., San Francisco, Calif.
Glidden Co., Nubian Div., Chicago, Ill.
Hague & Co., Inc., Alfred, Div. of Lacquer & Chemical Corp., Brooklyn, N. Y.
Heresite & Chemical Co., Manitowoc, Wis. (air dry pure phenolic & chlorinated rubber coatings)
Hilo Varnish Corp., Div. of Carpenter-Morton Co., Everett, Mass.
Horn Companies, A. C.; Subsidiary of Sun Chemical Corp., New York, N. Y.
Inter-Coastal Paint Corp., East St. Louis, Ill.
Interchemical Corp., Finishes Div., Newark, N. J.
Irvington Div., Minnesota Mining & Mfg. Co., Irvington, N. J.
Knight, Maurice A., Akron, O.
Koppers Co., Inc., Pittsburgh, Pa.
Krylon, Inc., Norristown, Pa.
Master Mechanics Co., Cleveland, O.
Metal & Thermit Corp., Rahway, N. J.
Midland Paint & Varnish Co., Cleveland, O.
National Lead Co., New York, N. Y.
Pittsburgh Plate Glass Co., Pittsburgh, Pa.
Quigley Co., Inc., New York, N. Y.
Reilly Tar & Chemical Corp., Indianapolis, Ind.
Rutland Fire Clay Co., Rutland, Vt.
S. O. S. Products Co., Inc., Brooklyn, N. Y.
Sandstrom Products Co., Port Byron, Ill.
Sherwin-Williams Co., The, Cleveland, O.
Sipe & Co., James B., Pittsburgh, Pa.
Sonneborn Sons, Inc., L., Building Products Div., New York, N. Y.
Southport Paint Co., Div. Wesson Oil & Snowdrift Co., Inc., Savannah, Ga.

Steelcote Mfg. Co., St. Louis, Mo.
Thompson and Co., Oakmont, Pa.
Tropical Paint Co., Cleveland, O.
Truscon Laboratories Div., Devoe & Raynolds Co., Inc., Detroit, Mich.
Valdura Div., American-Marietta Co., Chicago, Ill.
Warren Refining & Chemical Co., The, Cleveland, O.
Watson-Standard Co., Pittsburgh, Pa.
Wilbur & Williams Co., Brighton, Mass.
Wilhelm Co., A., Reading, Pa.
Zaco Laboratories, Cleveland, O. (spray units)

ENCLOSURES FOR PERIMETER AIR CONDITIONING SYSTEMS AND AIR CONDITIONING UNITS

Brandt & Co., Inc., Eugene J., Long Island City, N. Y.
Met-L-Wood Corp., Chicago, Ill.
Robertson Co., H. H., Pittsburgh, Pa.
Somers Corp., Detroit, Mich.

ENCLOSURES, RADIATOR

Brandt & Co., Inc., Eugene J., Long Island City, N. Y.
Diamond Mfg. Co., Wyoming, Pa.
Hendrick Mfg. Co., Carbondale, Pa.
Hoff Mfg. Co., Bethany, New Haven, Conn.
Met-L-Wood Corp., Chicago, Ill.
Somers Corp., Detroit, Mich.
Stedco Products, Wilkes-Barre, Pa.
United Sheet Metal Co., Inc., Columbus, O.

ENGINES, DIESEL, FOR FAN, PUMP AND COMPRESSOR DRIVES

Alco Products, Inc., Schenectady, N. Y.
Allis-Chalmers Mfg. Co., Milwaukee, Wis.
Anderson Diesel Engine Co., Philadelphia, Pa.
Berry-Hill Corp., Hill Diesel Engine Div., Providence, R. I.
Buda Div., Allis-Chalmers Mfg. Co., Harvey, Ill.
Chicago Pneumatic Tool Co., New York, N. Y.
Cooper-Bessemer Corp., The, Mt. Vernon, O.
Detroit Diesel Engine Div., General Motors Corp., Detroit, Mich.
Fairbanks, Morse & Co., Chicago, Ill.
Hamilton Div., Baldwin-Lima-Hamilton Corp., Hamilton, O.
Harnischfeger Corp., Milwaukee, Wis.
Ingersoll-Rand Co., New York, N. Y.
Onan & Sons Inc., D. W., Minneapolis, Minn.
Ready-Power Co., The, Detroit, Mich.
Solar Aircraft Co., San Diego, Calif.
Synchro-Start Products, Inc., Skokie, Ill. (automatic controls to start, stop and protect internal combustion engines)
Waukesha Motors Co., Waukesha, Wis.
Worthington Corp., East Orange, N. J.

ENGINES, GAS, FOR FAN, PUMP AND COMPRESSOR DRIVES

Buda Div., Allis-Chalmers Mfg. Co., Harvey, Ill.
Chicago Pneumatic Tool Co., New York, N. Y.
Cooper-Bessemer Corp., The, Mt. Vernon, O.
Fairbanks, Morse & Co., Chicago, Ill.
Ingersoll-Rand Co., New York, N. Y.
LeRoi Div., Westinghouse Air Brake Co., Milwaukee, Wis.
Onan & Sons Inc., D. W., Minneapolis, Minn.
Ready-Power Co., The, Detroit, Mich.
Synchro-Start Products, Inc., Skokie, Ill. (automatic controls to start, stop and protect internal combustion engines)
Waukesha Motor Co., Waukesha, Wis.
Worthington Corp., East Orange, N. J.

ENGINES, STEAM, FOR FAN, PUMP AND COMPRESSOR DRIVES

Skinner Engine Co., Erie, Pa.
Troy Engine & Machine Co., Troy, Pa.
Vilter Mfg. Co., Milwaukee, Wis.
Wachs Co., E. H., The, Chicago, Ill.
Westinghouse Electric Corp., Pittsburgh, Pa

EQUIPMENT, BALANCING

Bear Mfg. Co., Industrial Div., Rock Island, Ill. (dynamic)
Gisholt Machine Co., Madison, Wis.
Industrial Balancing Engineers Div., Calkins Machine & Tool Works, East Aurora, N. Y.
Olsen Testing Machine Co., Tinius, Willow Grove, Pa.

EQUIPMENT INSULATION

See Insulation, Boiler, Tank, and Equipment

EQUIPMENT, RADIOGRAPHIC INSPECTION

Fluor Products Co., Whittier, Calif.
General Electric Co., X-Ray Dept., Milwaukee, Wis.

EQUIPMENT, ULTRASONIC TESTING

Narda Ultrasonics Corp., Westbury, Long Island, N. Y.

EVAPORATIVE CONDENSERS

See Condensers, Refrigerating, Evaporative

EVAPORATIVE COOLERS

See Units, Air Conditioning, Summer, Evaporative Cooling Type

EVAPORATORS

See Chillers, Water

EXCHANGERS, HEAT, FOR AIR TO AIR HEAT RECOVERY

See Units, Heat Recovery, Air to Air

EXCHANGERS, HEAT, SHELL AND TUBE

Acme Industries, Inc., Jackson, Mich.
Adams Co., Inc., R. P., Buffalo, N. Y. (liquid to gas)
Adsco Div., Yuba Consolidated Industries, Inc., Buffalo, N. Y.
Alco Products, Inc., Schenectady, N. Y.
Alstrom Corp., New York, N. Y.
Aluminum Co. of America, Pittsburgh, Pa.
American-Standard, Ross Heat Exchanger Div., Buffalo, N. Y.
Armstrong Co., Richard M., West Chester, Pa.
Bell & Gossett Co., Morton Grove, Ill.
Beltran Associates, Inc., Brooklyn, N. Y.
Bernstrom, Inc., C. R., Providence, R. I.
Biggs Boiler Wks., Co., The, E. Akron, O.
Binks Mfg. Co., Chicago, Ill.
Birchfield Boiler, Inc., Tacoma, Wash.
Blaw Knox Co., Buflovak Equipment Div., Buffalo, N. Y.
Buxton Mfg. Co., Dover, N. J.
Carrier Corp., Syracuse, N. Y.
Cleaver-Brooks Co., Milwaukee, Wis.
Clifford Mfg. Co., Div. of Standard-Thomson Corp., Waltham, Mass.
Cochrane Corp., Philadelphia, Pa.
Condenser Service & Engineering Co., Inc., Hoboken, N. Y.
Cooley Co., E. C., San Francisco, Calif.
Corning Glass Works, Corning, N. Y.
Croll-Reynolds Engineering Co., Inc., New York, N. Y.
Davis Engineering Corp., Elizabeth, N. J.
Dean Thermo-Panel Coil Div., Dean Products, Inc., Brooklyn, N. Y.
Devine Mfg. Co., Inc., J. P., Pittsburgh, Pa
Downingtown Iron Works, Inc., Div. of Pressed Steel Tank Co., Dowingtown, Pa.
Doyle & Roth Mfg. Co., Inc., Brooklyn.
Drayer-Hanson, Div. of National-U. S. Radiator Corp., Los Angeles, Calif.
Dunham-Bush, Inc., West Hartford, Conn.
Duriron Co., The, Dayton, O. (acid resisting)
Electric Steel Foundry Co., Portland, Ore.
Ellicott Fabricators, Inc., Baltimore, Md.
Foster Wheeler Corp., New York, N. Y.
Frick Co., Waynesboro, Pa.
Gabriel Boiler Co., Portland, Ore.
General Fittings Co., East Greenwich, R. I.
Gilbert Brass Foundry Co., St. Louis, Mo.
Graham Mfg. Co., Inc., New York, N. Y.
Griscom-Russell Co., The, Massillon, O.
Haveg Industries, Inc., Wilmington, Del. (plastic)
Heat-Exchangers, Inc., Chicago, Ill.
Heat-X, Inc., Subsidiary of Dunham-Bush, Inc., West Hartford Conn.
Heatron, Inc., York, Pa.
Heil Process Equipment Corp., Cleveland, O.
Illinois Engineering Products, American Air Filter Co., Inc., Louisville, Ky.
Industrial Filter & Pump Co., Chicago, Ill.
Kaiser Co., E. B., Glenview, Ill.
Kellogg Co., M. W., The, New York, N. Y.
Killebrew Engineering Corp., St. Louis, Mo.
Knapp Mills, Inc., Long Island City, N.Y.
Kopperman & Sons, Inc., Joseph, Philadelphia, Pa.
Lindy Heaters, Inc., New York, N. Y.
Madden Corp., The, Chicago, Ill.
Manitowoc Shipbuilding, Inc., Manitowoc, Wis.
Manning & Lewis Engineering Co., Newark, N. J.
Marlo Coil Co., St. Louis, Mo.
McQuay, Inc., Minneapolis, Minn.
Modine Mfg. Co., Racine, Wis.
Mueller Brass Co., Port Huron, Mich.
National Pipe Bending Co., New Haven, Conn.
National-U. S. Radiator Corp., Johnstown, Pa.
Niagara Blower Co., New York, N. Y.
Nooter Corp., St. Louis, Mo.
Old Dominion Iron & Steel Corp., Richmond, Va.
Olin Mathieson Chemical Corp., Metals Div., East Alton, Ill. (roll bond panels incorporating fluid passages)
Patterson-Kelley Co., Inc., The, East Stroudsburg, Pa.
Process Engineering, Inc., Methuen, Mass.
Reco Products Div., Recony Corp., New York, N. Y.
Richmond Engineering Co., Richmond, Va.
Rite Engineering & Mfg. Corp., Downey, Calif.
Roessing Mfg. Co., Pittsburgh, Pa.
Schaub Engineering Co., Fred H., Chicago, Ill.
Schutte and Koerting Co., Cornwells Heights, Bucks County, Pa.
Semet-Solvay Engineering Div., Allied Chemical Corp., New York, N. Y.
Shutt Process Equipment Corp., St. Louis, Mo.
Sims Co., Erie, Pa.
Solar Aircraft Co., San Diego, Calif.
Stickle Steam Specialties Co., Indianapolis, Ind.
Stout & Sons, David, St. Louis, Mo.
Struthers Wells Corp., Warren, Pa.
Superior Valve & Fittings Co., Pittsburgh, Pa.
Taco Heaters, Inc., Cranston, R. I.
Terre Haute Boiler Works Co., Terre Haute, Ind.
Texas Metal Fabricating Co., Houston, Tex.
Thrush & Co., H. A., Peru, Ind.
Trane Co., The, LaCrosse, Wis.
Tranter Mfg., Inc., Lansing, Mich.
Union Iron Works, Erie, Pa.
Valley Foundry & Machine Works, Inc., Fresno, Calif.
Vapor Heating Corp., Chicago, Ill.
Vilter Mfg. Co., Milwaukee, Wis.
Vogt Machine Co., Henry, Louisville, Ky.
Westinghouse Electric Corp., Pittsburgh, Pa.
Wheeler Mfg. Co., C. H., Philadelphia, Pa.
Whitlock Mfg. Co., W. Hartford, Conn.
Wiegand Co., Edwin L., Pittsburgh, Pa (electric)
Wilson Engineering Corp., Chicago, Ill.
Worthington Corp., East Orange, N. J.
Yates-American Machine Co., Heat Transfer Products Div., Beloit, Wis.
York Corp., Subsidiary of Borg-Warner Corp., York, Pa.
Young Radiator Co., Racine, Wis.
Yuba Mfg. Div., Yuba Consolidated Industries, Inc., Benicia, Calif.
Yula Corp., Bronx, N. Y.

EXCHANGERS, HEAT, REFRIGERANT SUCTION LINE

Acme Industries, Inc., Jackson, Mich.
Armstrong Co., Richard M., West Chester, Pa.
Blazer & Son, M., Passaic, N. J.
Davis Engineering Corp., Elizabeth, N. J.
Dean Thermo-Panel Coil Div., Dean Products, Inc., Brooklyn, N. Y.
Dole Refrigerating Co., Chicago, Ill.
Doyle & Roth Mfg. Co., Inc., Brooklyn, N. Y.
Drayer-Hanson, Div. of National-U. S. Radiator Corp., Los Angeles, Calif.
Dunham-Bush, Inc., West Hartford, Conn.
Frick Co., Waynesboro, Pa.

Heat-Exchangers, Inc., Chicago, Ill.
Heat More Tankless Heater Co., Cambridge, Mass.
Heat-X, Inc., Subsidiary of Dunham-Bush, Inc., West Hartford, Conn.
Heatron, Inc., York, Pa.
Howe Ice Machine Co., Chicago, Ill.
Kaiser Co., E. B., Glenview, Ill.
Kenmore Machine Products, Inc., Lyons, N. Y.
Kramer Trenton Co., Trenton, N. J.
Larkin Coils, Inc., Atlanta, Ga.
Marlo Coil Co., St. Louis, Mo.
Mueller Brass Co., Port Huron, Mich.
Patterson-Kelley Co., Inc., The, East Stroudsburg, Pa.
Reco Products Div., Recony Corp., New York, N. Y.
Refrigeration Research, Inc., Brighton, Mich.
Rempe Co., Chicago, Ill.
Super Radiator Corp., Minneapolis, Minn.
Superior Valve and Fittings Co., Pittsburgh, Pa.
Techniflex Corp., Port Jervis, N. Y.
Trane Co., The, La Crosse, Wis.
Tranter Mfg. Inc., Lansing, Mich.
Vilter Mfg. Co., The, Milwaukee, Wis.
Witt Co., A. H., Los Angeles, Calif.

EXHAUST HEADS

See Heads, Exhaust, for Pipe Lines

EXHAUST VENTILATION FITTINGS

See Fittings, Exhaust, Garage, for Attaching Car Exhaust Pipe

EXHAUSTERS

See Units, Exhauster, Centrifugal Fan

EXHAUSTERS, WELDING FUME

Airfan Engineering Co., Los Angeles, Calif.
Aladdin Heating Corp., San Leandro, Calif.
Allen Cooler & Ventilator, Inc., Rochester, Mich.
Allington & Curtis Mfg. Co., Saginaw, Mich.
American Blower Div. of American-Standard, Detroit, Mich.
American Machine Products Co., Marshalltown, Ia.
Ammerman Co., Inc., Stillwater, Minn.
Atmos Corp., Chicago, Ill.
Barry Blower Co., Minneapolis, Minn.
Bertram Co., Harvey P., The, Cincinnati, O.
Brookside Corp., McCordsville, Ind.
Champion Blower & Forge Co., Lancaster, Pa.
Chicago Blower Corp., Franklin Park, Ill.
Coppus Engineering Corp., Worcester, Mass.
Dana Fan & Blower Corp., Cincinnati, O.
Day Co., The, Minneapolis, Minn.
DeVilbiss Metal Fabricators Co. Detroit, Mich.
Emerson Electric Mfg. Co., The, St. Louis, Mo.
Engwald Corp., The, Inwood, Long Island, N. Y.
Gallaher Co., The, Omaha, Neb.
General Blower Co., Morton Grove, Ill.
Jenn-Air Products Co., Indianapolis, Ind.
Kirk & Blum Mfg. Co., Cincinnati, O.
Kody Blower Co., Trenton, N. J.
M & E Mfg. Co., Indianapolis, Ind.
Martin Fan & Blower Co., Chicago, Ill.
Mine Safety Appliances Co., Pittsburgh, Pa.
Quickdraft Corp., Canton, O.
Ruemelin Mfg. Co., Milwaukee, Wis.
Torit Mfg. Co., St. Paul, Minn.
Utility Fan Corp., Div. of Utility Appliance Corp., Los Angeles, Calif.
Wing Mfg. Co., L. J., Div. of Aero Supply Mfg. Co., Inc., Linden, N. J.

EXPANDERS, TUBE

Airetool Mfg. Co., Springfield, O.
Burr Oak Tool & Gauge Co., Sturgis, Mich.
Chicago Pneumatic Tool Co., New York, N. Y.
Crane Packing Co., Morton Grove, Ill.
Elliott Co., Jeannette, Pa.
Henderer's Sons, A. L., Wilmington, Del.
Hill, Inc., Walter P., Detroit, Mich.
Talon Tools, Inc., North Arlington, N. J.
Vernon Tool Co., Ltd., Alhambra, Calif.
Wiedeke Co., The Gustav, Dayton, O.
Wilson, Inc., Thomas C., Long Island City, N. Y.

EXPANSION BENDS

See Bends, Expansion

EXPANSION BOLTS

See Bolts, Expansion

EXPANSION JOINTS

See Joints, Pipe Expansion

EXPANSION TANKS

See Tanks, Expansion, for Hot Water Heating Systems

EXPANSION VALVES

See Valves, Refrigeration

EXTENSIONS, FURNACE, WATER WALL, FOR BOILERS

Crotty Mfg. Corp., Flushing, L. I., N. Y.

EXTRACTORS, PIPE

Chicago Specialty Mfg. Co., Chicago, Ill.
Greenfield Tap & Die Div. of United Greenfield Corp., Greenfield, Mass.
Ridge Tool Co., Elyria, O.
Roddick Tool Co., Anaheim, Calif.
Snap-on Tools Corp., Kenosha, Wis.
Talon Tools, Inc., North Arlington, N. J. (internal wrenches)
Walton Co., Hartford, Conn.

FABRICATED PIPING

See Bends; Headers; etc.

FABRICATORS, PIPE

See Headers, Pipe, Welded; and Coils, Pipe

FAN BALANCING EQUIPMENT

See Equipment, Balancing

FAN BASES

See Bases, Vibration Isolating, Pad Type, and Bases, Vibration Isolating, Spring Type

FAN BLADES

See Blades, Propeller Fan

FAN-COIL UNITS

See Units, Air-Conditioning Year Around, Fan-Coil Type

FAN CONTROLS

See Controls, Fan

FAN HOUSINGS

See Housings, Fan, Centrifugal

FANS, AXIAL FLOW, PRESSURE TYPE

Aerovent Fan Co., Inc., Piqua, O. (Tubeaxial and vanexial)
Alloy Propeller, Zelionople, Pa. (Tubeaxial)
American Blower Div. of American-Standard, Detroit, Mich. (tubeaxial and vaneaxial)
Bahnson Co., Winston-Salem, N. C. (Vaneaxial)
Bertram Co., Harvey P., The, Cincinnati, O.
Brookside Corp., McCordsville, Ind.
Buffalo Forge Co., Buffalo, N. Y.
Chelsea Fan & Blower Co., Inc., Subsidiary of Chelsea Products, Inc., Plainfield, N. J.
Chicago Blower Corp., Franklin Park, Ill. (tubeaxial and vaneaxial)
De Bothezat Fans Div., American Machine & Metals, Inc., East Moline, Ill.
Detroit Blower Corp., Franklin Park, Ill.
Dynamic Air Engineering, Inc., Los Angeles. Calif. (tubeaxial and vaneaxial)
Electric Boat Co., Groton, Conn. (vaneaxial)
Hartzell Propeller Fan Co., Piqua, O. (tubeaxial and vaneaxial)
Ilg Electric Ventilating Co., Chicago, Ill.
Industrial Plastic Fabricators, Norwood, Mass. (PVC) (tubeaxial)
International Engineering Inc., Dayton, O.
Joy Mfg. Co., Pittsburgh, Pa. (vaneaxial)
Kody Blower Co., Trenton, N. J. (tubeaxial and vaneaxial)
Lennox Industries Inc., Des Moines, Ia. (tubeaxial)
Lennox Industries Inc., Marshalltown, Ia. (vaneaxial)
M & E Mfg. Co., Indianapolis, Ind. (tubeaxial)
Martin Fan & Blower Co., Chicago, Ill.
Master Fan Corp., Los Angeles, Calif. (tubeaxial & vaneaxial)
Moore Co., The, Marceline, Mo. (vaneaxial)
Penn Ventilator Co., Philadelphia, Pa. (tubeaxial)
Pesco Products Div., Borg-Warner Corp., Bedford, O.
Plant Engineering & Equipment Co., Elizabeth, N. J.
Power Line Fan Co., Inc., Subsidiary of Chelsea Products, Inc., Plainfield, N. J.
Propellair Div., Robbins & Myers, Inc., Springfield, O. (tubeaxial and vaneaxial)
Reed Unit-Fans, Inc., New Orleans, La. (tubeaxial)
Robinson Ventilating Co., Zelienople, Pa. (tubeaxial)
South Bend Air Products, Inc., South Bend Ind.
Stanat Mfg. Co., Inc., Westbury, N. Y. (vaneaxial—2 to 6 in. diameter)
Standard Electric Mfg. Co., West Berlin, N. J. (tubeaxial)
Trade-Wind Motorfans, Inc., Pico Rivera, Calif.
Westinghouse Electric Corp., Sturtevant Div. Boston, Mass.
Wing Mfg. Co., L. J., Div. of Aero Supply Mfg. Co., Inc., Linden, N. J. (vaneaxial)

FANS, CENTRIFUGAL

Air Conditioning Engineering Co., Cambridge, Mass.
Air Controls, Inc., Div. of Cleveland Heater Co., Cleveland, O.
Airfan Engineering Co., Los Angeles, Calif.
Airwasher Corp., Eaton Rapids, Mich.
Aladdin Heating Corp., San Leandro, Calif.
Allington & Curtis Mfg. Co., Saginaw, Mich.
Alloy Propeller, Zelionople, Pa. (Stainless Steel)
American Agile Corp., Bedford, O.
American Blower Div. of American Standard, Detroit, Mich.
American Foundry & Furnace Co., Bloomington, Ill.
American Machine Products Co., Marshalltown, Ia.
Ammerman Co., Inc., Stillwater, Minn.
Arden Airflo Engineering, Inc., El Monte, Calif.
Barry Blower Co., Minneapolis, Minn.
Bayley Blower Co., Milwaukee, Wis.
Bronson Fan Mfg. Corp., Los Angeles, Calif.
Brookside Corp., McCordsville, Ind.
Brundage Co., The, Kalamazoo, Mich.
Buffalo Forge Co., Buffalo, N. Y.
Burdett Mfg. Co., Chicago, Ill.
Campbell Co., E. K., Kansas City, Mo.
Campbell Heating Co., Des Moines, Ia.
Carling Turbine Blower Co., Worcester, Mass.
Carolina Blower Co., Inc., Greensboro, N. C. (shaving exhauster)
Carrier Corp., Syracuse, N. Y.
Century Fan & Ventilator Co., Inc., Stamford, Conn.
Champion Blower & Forge Co., Lancaster, Pa.
Chelsea Fan & Blower Co., Inc., Subsidiary of Chelsea Products, Inc., Plainfield, N. J.
Chicago Blower Corp., Franklin Park, Ill.
Clarage Fan Co., Kalamazoo, Mich.
Commercialaire Corp. of America, Brooklyn, N. Y.
Cook Co., Loren, Berea, O.
Coppus Engineering Corp., Worcester, Mass.
Day Co., The, Minneapolis, Minn.
Dayton Electric Mfg. Co., Chicago, Ill.
Dryer Electric Corp., Fan Div., Brooklyn, N. Y.
Duriron Co., Inc., Dayton, O. (Acid resisting)
DuVerre, Inc., Buffalo, N. Y. (plastic)
Dynamic Air Engineering, Inc., Los Angeles, Calif.
Eclipse Fuel Engineering Co., Rockford, Ill.
Electrovent Fan & Mfg. Co., Chicago, Ill.
Fedders-Quigan Corp., Buffalo, N. Y.
Frigid, Inc., Brooklyn, N. Y.
Gallaher Co., The, Omaha, Neb.
Garden City Fan Co., Niles, Mich.
General Blower Co., Morton Grove, Ill.
General Blower Co., Philadelphia, Pa.
General Ceramics Corp., Keasbey, N. J. (ceramics, plastic)
Green Fuel Economizer Co., Inc., The, Beacon, N. Y.
Hamilton Fan & Blower Co., Inc., Cincinnati, O.
Hartzell Propeller Fan Co., Piqua, O.
Heil Process Equipment Corp., Cleveland, O. Solid plastic and coated solid plastic, and rubber lined)

Herman Nelson Products, American Air Filter Co., Inc., Louisville, Ky.
Ilg Electric Ventilating Co., Chicago, Ill.
Industrial Plastic Fabricators, Norwood, Mass. (PVC)
Jackson & Church Co., Saginaw, Mich.
Jamieson Mfg. Co., Dallas, Tex.
Jeffrey Mfg. Co., Columbus, O.
Jenn-Air Products Co., Indianapolis, Ind.
Joy Mfg. Co., Pittsburgh, Pa.
Kice Metal Products Co., Wichita, Kans.
Lau Blower Co., Dayton, O.
Lennox Industries Inc., Marshalltown, Ia.
Magic Aire Div., United Electric Co., Wichita Falls, Tex.
MaGirl Foundry & Furnace Co., Bloomington, Ill.
Marlo Coil Co., St. Louis, Mo.
Martin Fan & Blower Co., Chicago, Ill.
Master Fan Corp., Los Angeles, Calif.
Morrison Products, Inc., Cleveland, O.
Mountain States Equipment Co., Denver, Colo.
Mueller Climatrol, Div. of Worthington Corp., Milwaukee, Wis.
National Engineering & Mfg. Co., Sedalia, Mo.
New York Blower Co., Chicago, Ill.
Newcomb-Detroit Co., Detroit, Mich.
Niagara Blower Co., New York, N. Y.
Northern Blower Co., Cleveland, O.
Peerless Electric Co., Warren, O.
Phelps Mfg. Co., Little Rock, Ark.
Plant Engineering & Equipment Co., Elizabeth, N. J.
Power Engineering Corp., Weirton, W. Va.
Power Line Fan Co., Inc., Subsidiary of Chelsea Products, Inc., Plainfield, N. J.
Propellair Div., Robbins & Myers, Inc., Springfield, O.
R & R Metal Products, Inc., Chicago, Ill.
Redmond Co., Inc., Owosso, Mich.
Reliable Products Mfg. Co., Inc., Brooklyn.
Reynolds Mfg. Co., The, Comstock Park, Mich.
Revcor Inc., Carpentersville, Ill.
Ripley Co., Inc., Middletown, Conn. (for cooling aircraft and electronic equipment)
Robinson Ventilating Co., Zelienople, Pa.
Small Motors, Inc., Chicago, Ill. (small sizes)
Torrington Mfg. Co., The, Torrington, Conn.
Trade-Wind Motorfans, Inc., Pico Rivera, Calif.
Trane Co., The, LaCrosse, Wis.
Tuck-Aire Furnace Co., San Francisco, Calif.
United States Air Conditioning Corp., Delaware, O.
Universal Electric Co., Owosso, Mich.
Utility Appliance Corp., Los Angeles, Calif.
Utility Fan Corp., Div. of Utility Appliance Corp., Los Angeles, Calif.
Valley Foundry & Machine Works, Inc., Fresno, Calif.
Viking Air Products, Div. of National-U. S. Radiator Corp., Cleveland, O.
Western Blower Co., Seattle, Wash.
Westinghouse Electric Corp., Sturtevant Div., Boston, Mass.

FANS, MATERIALS HANDLING

Air Conditioning Engineering Co., Cambridge, Mass.
Airfan Engineering Co., Los Angeles, Calif.
Aladdin Heating Corp., San Leandro, Calif.
Allington & Curtis Mfg. Co., Saginaw, Mich.
American Blower Div. of American-Standard, Detroit, Mich.
Barry Blower Co., Minneapolis, Minn.
Bayley Blower Co., Milwaukee, Wis.
Brookside Corp., McCordsville, Ind.
Buffalo Forge Co., Buffalo, N. Y.
Cardwell Machine Co., Richmond, Va.
Century Fan & Ventilator Co., Inc., Stamford, Conn.
Chicago Blower Corp., Franklin Park, Ill.
Clarage Fan Co., Kalamazoo, Mich.
Day Co., The, Minneapolis, Minn.
Detroit Blower Corp., Franklin Park, Ill.
Ft. Worth Steel & Machinery Co., Ft. Worth, Tex.
Garden City Fan Co., Niles, Mich.
General Blower Co., Morton Grove, Ill.
Herman Nelson Products, American Air Filter Co., Inc., Louisville, Ky.
Kice Metal Products Co., Wichita, Kans.
Kody Blower Co., Trenton, N. J.
Martin Fan & Blower Co., Chicago, Ill.
Master Fan Corp., Los Angeles, Calif.
Newcomb-Detroit Co., Detroit, Mich.

New York Blower Co., Chicago, Ill.
Peerless Electric Co., Warren, O.
Phelps Mfg. Co., Little Rock, Ark.
Power Engineering Corp., Weirton, W. Va.
Propellair Div., Robbins & Myers, Inc., Springfield, O.
Quickdraft Corp., Canton, O.
Robinson Ventilating Co., Zelienople, Pa.
Sprout, Waldron & Co., Inc., Muncy, Pa.

FANS, MECHANICAL DRAFT, FOR BOILERS

American Blower Div. of American-Standard, Detroit, Mich.
Ammerman Co., Inc., Stillwater, Minn.
Barry Blower Co., Minneapolis, Minn.
Bayley Blower Co., Milwaukee, Wis.
Bertram Co., Harvey P., The, Cincinnati, O.
Bressler Engineering Service, Oregon, Ill.
Brookside Corp., McCordsville, Ind.
Buffalo Forge Co., Buffalo, N. Y.
Century Fan & Ventilator Co., Inc., Stamford, Conn.
Chicago Blower Corp., Franklin Park, Ill.
Clarage Fan Co., Kalamazoo, Mich.
De Bothezat Fans Div., American Machine & Metals, Inc., East Moline, Ill.
Dryer Electric Corp., Fan Div., Brooklyn, N. Y.
Gallaher Co., The, Omaha, Neb.
Garden City Fan Co., Niles, Mich.
General Blower Co., Morton Grove, Ill.
General Blower Co., Philadelphia, Pa.
Green Fuel Economizer Co., Inc., The, Beacon, N. Y.
International Engineering, Inc., Dayton, O.
Kody Blower Co., Trenton, N. J.
Kol-Master Corp., Oregon, Ill.
Lehigh Fan & Blower Div., Fuller Co., Catasauqua, Pa.
Martin Fan & Blower Co., Chicago, Ill.
Master Fan Corp., Los Angeles, Calif.
OverHead Heaters, Inc., Detroit, Mich.
Pacific Steel Boiler Div., National-U.S. Radiator Corp., Johnstown, Pa.
Plant Engineering & Equipment Co., Elizabeth, N. J.
Plant Equipment Div., General Blower Co., Inc., Philadelphia, Pa.
Power Engineering Corp., Weirton, W. Va.
Quickdraft Co., Canton, O.
Reliable Products Mfg. Co., Inc., Brooklyn, N. Y.
Robinson Ventilating Co., Zelienople, Pa.
Tjernlund Mfg. Co., St. Paul, Minn.
Walker Mfg. & Sales Co., St. Joseph, Mo.
Westinghouse Electric Corp., Sturtevant Div., Boston, Mass.
Whitty Co., Inc., Boston, Mass.
Wing Mfg. Co., L. J., Div. of Aero Supply Mfg. Co., Inc., Linden, N. J.

FANS, PROPELLER

Acme Engineering & Mfg. Corp., Muskogee, Okla.
Aerovent Fan Co., Inc., Piqua, O.
Air Controls, Inc., Div. of Cleveland Heater Co., Cleveland, O.
Aire-Foile Fan & Blower Co., Detroit, Mich.
Airmaster Corp., Chicago, Ill.
Airserco Mfg. Co., Inc., Pittsburgh, Pa.
Allen Cooler & Ventilator, Inc., Rochester, Mich.
Alloy Propeller, Zelionople, Pa. (Stainless Steel)
American Blower Div. of American-Standard, Detroit, Mich.
American Coolair Corp., Jacksonville, Fla.
Ammerman Co., Inc., Stillwater, Minn.
Arden Airoflo Engineering, Inc., El Monte, Calif.
Bar-Brook Mfg. Co., Inc., Shreveport, La.
Belco Industries, Inc., St. Louis, Mo.
Bertram Co., Harvey P., The, Cincinnati, O.
Broan Mfg. Co., Inc., Hartford, Wis.
Bronson Fan Mfg. Corp., Los Angeles, Calif.
Brookside Corp., McCordsville, Ind.
Buffalo Forge Co., Buffalo, N. Y.
Burden Co., Alan E., Los Angeles, Calif.
C & H Air Conditioning Fan Co., Inc., Atlanta, Ga.
Carey Mfg. Co., Philip, Lockland, Cincinnati, O.
Century Fan & Ventilator Co., Inc., Stamford, Conn.
Champion Blower & Forge Co., Lancaster, Pa.
Chelsea Fan & Blower Co., Inc., Subsidiary of Chelsea Products, Inc., Plainfield, N. J.
Chicago Blower Corp., Franklin Park, Ill.
Clarage Fan Co., Kalamazoo, Mich.
Commercialaire Corp. of America, Brooklyn, N. Y.
Consolidated General Products, Inc., Houston, Tex.
Cook Co., Loren, Berea, O.
Coppus Engineering Corp., Worcester, Mass.
Dayton Electric Mfg. Co., Chicago, Ill.
De Bothezat Fans Div., American Machine & Metals, Inc., New York, N. Y.
Degree Corp., Kansas City, Kans.
Detroit Blower Corp., Franklin Park, Ill.
DeVilbiss Co., The, Toledo, O.
Diehl Mfg. Co., Finderne Plant, Somerville, N. J.
Donaldson Div., Marvin D. Shafer Co., Inc., Los Angeles, Calif.
Dynamic Air Engineering, Inc., Los Angeles.
Electrovent Fan & Mfg. Co., Chicago, Ill.
Emerson Electric Mfg. Co., The, St. Louis, Mo.
Fasco Industries, Inc., Rochester, N. Y.
Fresh'nd-Aire Co., Div. of Cory Corp., Chicago, Ill.
Frigid, Inc., Brooklyn, N. Y.
Gallaher Co., The, Omaha, Nebr.
General Blower Co., Morton Grove, Ill.
Hamilton Fan & Blower Co., Inc., Cincinnati, O.
Hartzell Propeller Fan Co., Piqua, O.
Herman Nelson Products, American Air Filter Co., Inc., Louisville, Ky.
Hill **Co., Francis**, Cleveland, O.
Hunter Div., Robbins & Myers, Inc., Memphis, Tenn.
Ilg Electric Ventilating Co., Chicago, Ill.
International Engineering, Inc., Dayton, O.
Jamieson Mfg. Co., Dallas, Tex.
Jeffrey Mfg. Co., Columbus, O.
Jenn-Air Products Co., Indianapolis, Ind.
Jordan & Co., Inc., Paul R., Indianapolis, Ind.
Kody Blower Co., Trenton, N. J.
Koppers Company, Inc., Metal Products Div., Baltimore, Md.
Lakewood Engineering & Mfg. Co., Chicago, Ill.
Lau Blower Co., Dayton, O.
M & E Mfg. Co., Indianapolis, Ind.
Magic Aire Div., United Electric Co., Wichita Falls, Tex.
Main Cornice Works, Inc., Los Angeles, Calif.
Martin Fan & Blower Co., Chicago, Ill.
Master Fan Corp., Los Angeles, Calif.
McLarty Systems, Battle Creek, Mich.
Meier Electric & Machine Co., Inc., Indianapolis, Ind.
Moore Co., The, Marceline, Mo.
Morrill Motors, Ft. Wayne, Ind.
Mountain States Equipment Co., Denver.
Muckle Mfg. Co., Owatonna, Minn.
Murray Co. of Texas, The, Atlanta, Ga.
National Engineering & Mfg. Co., Sedalia, Mo.
National Gas Equipment Co., Inc., Denison, Tex.
New York Blower Co., Chicago, Ill.
Norky Mfg. Co., Covington, Ky.
Peerless Electric Co., Warren, O.
Perkins & Son, Inc., B. F., Holyoke, Mass.
Phelps Mfg. Co., Little Rock, Ark.
Power Line Fan Co., Inc., Subsidiary of Chelsea Products, Inc., Plainfield, N. J.
Precision Fan Blade Mfg. Co., Div. of Warrington Co., Los Angeles, Calif.
Propellair Div., Robbins & Myers, Inc., Springfield, O.
Reed Unit-Fans, Inc., New Orleans, La.
Reynolds Electric Co., River Grove, Ill.
Robinson Ventilating Co., Zelienople, Pa.
Schwitzer Corp., Indianapolis, Ind.
South Bend Air Products, Inc., South Bend, Ind.
Standard Electric Mfg. Co., West Berlin, N J.
Sutton Corp., O. A., The, Wichita, Kan.
Swift Mfg. Co., Inc., Royal Oak, Mich.
Torrington Mfg. Co., The, Torrington, Conn.
Trade-Wind Motorfans, Inc., Pico Rivera, Calif.
Trane Co., The, LaCrosse, Wis.
Truflo Fan Co., Harmony, Pa.
Viking Air Products, Div. of National-U. S. Radiator Corp., Cleveland, O.
Western Blower Co., Seattle, Wash.
Western Engineering & Mfg. Co., Venice, Calif.

Westinghouse Electric Corp., Electric Appliance Div., E. Springfield, Mass.
Whirlwind Mfg. Co., Houston, Tex.
Wind-Way Fan & Ventilating Co., New Orleans, La.
Wing Mfg. Co., L. J., Div. of Aero Supply Mfg. Co., Inc., Linden, N. J.

FASTENERS, INSULATION

Acme Steel Co., Chicago, Ill (steel strapping)
Devices, Inc., A Div. of Miracle Adhesives Corp., Bellmore, N. Y.
Gerrard & Co., A. J., Melrose Park, Ill.
Graham Mfg. Corp., Needham Hts., Mass.
Hilti Rapid Fastening Systems, Inc., Stamford, Conn.
Holub Industries, Inc., Sycamore, Ill.
Lexsuco, Inc., Solon, O.
Minnesota Mining & Mfg. Co., Adhesives & Coatings Div., Detroit, Mich.
Moore, Inc., Goodloe E., Danville, Ill.
Nelson Stud Welding Div., Gregory Industries Inc., Lorain, O.
Phillips Drill Co., Michigan City, Ind.
Polis Mfg. Co., Div. of Gregory Industries, Lorain, O.
Ramset Fastening System, Winchester-Western Div., Olin Mathieson Chemical Corp., Cleveland, O. (powder-actuated)
Remington Arms Co., Inc., Bridgeport, Conn.
Stic-Klip Mfg. Co., Inc., Cambridge, Mass.
Taft-Jenkins Co., Inc., Holyoke, Mass.
Tinnerman Corp., George A., Cleveland, O.
United Carr Fastener Corp., Cambridge, Mass.

FASTENERS, POWDER OPERATED

Ammo Products, Inc., Washington, D. C.
du Pont de Nemours & Co., E. I., Wilmington, Del. (chemical expansion blind rivets)
Hilti Rapid Fastening Systems, Inc., Stamford, Conn.
Omark Industries, Inc., Portland, Ore.
Ramset Fastening System, Winchester-Western Div., Olin Mathieson Chemical Corp., Cleveland, O.
Remington Arms Co., Inc., Bridgeport, Conn.
Tempo Products Co., Cleveland, O.
Velocity Power Tool Co., Div. of Mine Safety Appliances Co., Pittsburgh, Pa.

FEEDERS, CHEMICAL, PROPORTIONING

American Water Softener Co., Philadelphia, Pa.
Belco Industrial Equipment Div., Bogue Electric Mfg. Co., Paterson, N. J.
Calgon Co., Pittsburgh, Pa.
Clark-Cooper Co., Inc., C C Pump Div., Palmyra, N. J.
Clayton Mark & Co., Evanston, Ill.
Cochrane Corp., Philadelphia, Pa.
Dearborn Chemical Co., Chicago, Ill.
Elgin Softener Corp., Elgin, Ill.
Fischer & Porter Co., Hatboro, Pa.
Graver Water Conditioning Co., New York, N. Y.
Hills-McCanna Co., Chicago, Ill.
Hungerford & Terry, Inc., Clayton, N. J.
Jeffrey Mfg. Co., Columbus, O.
Lapp Insulator Co., LeRoy, N. Y.
Metropolitan Refining Co., Inc., Long Island City, N. Y.
Milton Roy Co., Philadelphia, Pa.
Myers & Bros. Co., F. E., The, Ashland, O.
Omega Div., B-I-F Industries, Inc., Providence, R. I. (liquid and dry)
Permutit Co., Div. of Pfaudler Permutit, Inc., New York, N. Y.
Philadelphia Pump Div., American Meter Co., Philadelphia, Pa.
Proportioneers, Inc., Div. of B-I-F Industries, Inc., Providence, R. I.
Pulverizing Machinery Div., Metals Disintegrating Co., Inc., Summit, N. J.
Research Appliance Co., Allison Park, Pa.
Sealmaster Bearings, Div. of Stephens-Adamson Mfg. Co., Aurora, Ill.
Smith Chemical Co., E. W., La Puente, Calif.
Stiles Karlsonite Corp., Waukegan, Ill.
Wallace & Tiernan, Inc., Belleville, N. J.

FEEDERS, WATER, HEATING BOILER

Acker Corp., Meridian, Miss.
Bailey Co., Chas. M., San Francisco, Calif.
Calgon Co., Pittsburgh, Pa.
Campbell Co., J. A., Long Beach, Calif.
Cash Valve Mfg. Corp., A. W., Decatur, Ill.
Eclipse Fuel Engineering Co., Rockford, Ill.
Kieley & Mueller, Inc., Middletown, N. Y.
Magnetrol, Inc., Chicago, Ill.
Maid-O'-Mist, Inc., Chicago, Ill.
McAlear Mfg. Co., Chicago, Ill.
McDonnell & Miller, Inc., Chicago, Ill.
Morehead Moisture Control, Detroit, Mich.
Penberthy Mfg. Co., Div. of Buffalo Eclipse Corp., Detroit, Mich.
Schaub Engineering Co., Fred H., Chicago.
Squires Co., C. E., The, Cleveland, O.
Watts Regulator Co., Lawrence, Mass.
Webster & Co., Warren, Camden, N. J.

FEEDWATER HEATERS

See Deaerators

FIBERS FOR AIR FILTERS

American Felt Co., Glenville, Conn.
American Viscose Corp., New York, N. Y.
Chicopee Mills, Inc., New York, N. Y.
Microtron Corp., Charlotte, N. C.
Pittsburgh Plate Glass Co., Pittsburgh, Pa.

FIBER PACKING

See Packing, Fiber

FIBER PIPE

See Pipe, Fiber

FILTER AIR FIBERS

See Fibers for Air Filters

FILTER GAGES

See Gages, Air Filter

FILTER OILS

See Oils, for Coating Viscous Air Filters

FILTERS, AIR, AUTOMATIC, DRY

Air-Stream Filter Corp., St. Louis, Mo.
American Air Filter Co., Inc., Louisville, Ky.
Continental Air Filters, Inc., Louisville, Ky.
Day Co., The, Minneapolis, Minn.
Ducon Co., Inc., The, Mineola, N. Y.
Farr Co., Los Angeles, Calif.
Flanders Filters, Inc., Riverhead, Long Island, N. Y.
Gray Co., Inc., Minneapolis, Minn.
Green Fuel Economizer Co., Inc., The, Beacon, N. Y.
Hanna Engineering Works, Chicago, Ill.
Trion, Inc., McKees Rocks, Pa.
Wheelabrator Corp., Mishawaka, Ind.

FILTERS, AIR, AUTOMATIC, VISCOUS

Air-Maze Corp., Cleveland,, O.
American Air Filter Co., Inc., Louisville, Ky.
Burnett, Jr., Inc., J. F., Rochester, N. Y.
Continental Air Filters, Inc., Louisville, Ky.
Dollinger Corp., Rochester, N. Y.
Farr Co., Los Angeles, Calif.

FILTERS, AIR, ELECTRICAL

See Filters, Air, Electrostatic (with outside power source)

FILTERS, AIR, ELECTROSTATIC

(with outside power source)

Air-Maze Corp., Cleveland, O.
American Air Filter Co., Inc., Louisville, Ky.
Dollinger Corp., Rochester N. Y.
Electro-air Cleaner Co., Inc., McKees Rocks, Pa.
General Electric Co., Air Conditioning Dept., Tyler, Tex. (up to 2000 cfm)
Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.
Mueller Climatrol, Div. of Worthington Corp., Milwaukee, Wis.
Radex Corp., Chicago, Ill.
Trion, Inc., McKees Rocks, Pa.
Westinghouse Electric Corp., Sturtevant Div., Boston, Mass.

FILTERS, AIR, GREASE

Specifically designed for kitchen exhaust systems

Air-Con Filter Corp., Memphis, Tenn.
Air Devices, Inc., New York, N. Y.
Air Filter Corp., Milwaukee, Wis.
Air-Maze Corp., Cleveland, O.
Air-Stream Filter Corp., St. Louis, Mo.
American Air Filter Co., Inc., Louisville, Ky.
Carey Electronic Engineering Co., Metal Wool Div., Springfield, O.
Continental Air Filters, Inc., Louisville, Ky.
Cuno Engineering Co., Meriden, Conn.
Dollinger Corp., Rochester, N. Y.
Evans Corp., The, George, Moline, Ill.
Farr Co., Los Angeles, Calif.
Research Products Corp., Madison, Wis.
Smith Filter Corp., Moline, Ill. (Aluminum)
Trion, Inc., McKees Rocks, Pa.
Vortox Co., Claremont, Calif.

FILTERS, AIR, HIGH TEMPERATURE

(For use in filtering air at temperatures of 1000 *F and above)*

Cambridge Filter Corp., Syracuse, N.Y.
Continental Air Filters, Inc., Louisville, Ky.
Farr Co., Los Angeles, Calif.
Flanders Filters, Inc., Riverhead, Long Island, N. Y.
Mine Safety Appliances Co., Pittsburgh, Pa.

FILTERS, AIR, MANUAL, DRY

American Air Filter Co., Inc., Louisville, Ky.
Continental Air Filters, Inc., Louisville, Ky.

FILTERS, AIR, PANEL, DRY

Air-Maze Corp., Cleveland, O.
Aluminum Wool Div., Carey Electronic Engineering Co., Springfield, O.
American Air Filter Co., Inc., Louisville, Ky.
Arco Mfg. Co., New York, N. Y.
Cambridge Filter Corp., Syracuse, N. Y.
Carey Electronic Engineering Co., Metal Wool Div., Springfield, O.
Continental Air Filters, Inc., Louisville, Ky.
Coppus Engineering Corp., Worcester, Mass.
Cuno Engineering Co., Meriden, Conn.
Dollinger Corp., Rochester, N. Y.
Drico Industrial Corp., Passaic, N. J.
Farr Co., Los Angeles, Calif.
Fiber Bond Corp., Chicago, Ill.
Filt-R-Ite Co., Chicago, Ill.
Hadley Products Co., Inc., Marietta, O.
Master Products Co., Chicago, Ill.
Microtron Corp., Charlotte, N. C.
Peden Equipment Co., Houston, Texas
Pittsburgh Plate Glass Co., Pittsburgh, Pa.
Pollen Ex Co., Chicago, Ill.
Skuttle Mfg. Co., Milford, Mich.
Somers Corp., Detroit, Mich.
Star Woolen Co., Cohoes, N.Y.

FILTERS, AIR, PANEL, DRY, COMBINED WITH ACTIVATED CHARCOAL FOR ODOR CONTROL

Barnebey-Cheney Co., Columbus, O.
Cambridge Filter Corp., Syracuse, N. Y.
Flanders Filters, Inc., Riverhead, Long Island, N.Y.

FILTERS, AIR, PANEL, DRY, SUBMICRON PARTICULATE

American Air Filter Co., Inc., Louisville, Ky.
Cambridge Filter Co., Syracuse, N. Y.
Continental Air Filters, Inc., Louisville, Ky.
Farr Co., Los Angeles, Calif.
Flanders Filters, Inc., Riverhead, Long Island, N.Y.
Mine Safety Appliances, Pittsburgh, Pa.

FILTERS, AIR, PANEL WITH PLASTIC MEDIA

Besser Furnace and Air Conditioning Corp., Charlotte, N. C.
Continental Air Filters, Inc., Louisville, Ky.
Duralast Filter Corp., New Orleans, La.
Eaton Air Filter Co., Detroit, Mich.
Gelman Instrument Co., Chelsea, Mich.
Goodyear Tire & Rubber Co., Akron, O.
Hadley Products Co., Inc., Marietta, O.
Microtron Corp., Charlotte, N. C.
Permatron Corp., Chicago, Ill.
Stoddard Industries, Inc., Chicago, Ill.

FILTERS, AIR, PANEL, VISCOUS

Air-Con Filter Corp., Memphis, Tenn.
Air Devices, Inc., New York, N. Y.
Air Filter Corp., Milwaukee, Wis.

Air-Maze Corp., Cleveland, O.
Air-Stream Filter Corp., St. Louis, Mo.
American Air Filter Co., Inc., Louisville.
Associated Mills, Inc., Chicago, Ill.
Besser Furnace and Air Conditioning Corp., Charlotte, N.C.
Continental Air Filters, Inc., Louisville, Ky.
Dollinger Corp., Rochester, N. Y.
Drico Industrial Corp., Passaic, N. J.
Evans Corp., The, George, Moline, Ill.
Farr Co., Los Angeles, Calif.
Fiber Bond Corp., Chicago, Ill.
Goodyear Tire & Rubber Co., Akron, O.
Research Products Corp., Madison, Wis.
Smith Filter Corp., Moline, Ill. (Aluminum)
Vortox Co., Claremont, Calif.
Wickford Products, Inc., New York, N. Y.

FILTERS, AIR, THROW-AWAY

Airgard Mfg. Co., Chicago, Ill.
Air-Maze Corp., Cleveland, O.
Air-Stream Filter Corp., St. Louis, Mo.
American Air Filter Co., Inc., Louisville, Ky.
Arco Mfg. Corp., New York, N. Y.
Bowman Inc., D. F., Clearwater, Fla. (Special sizes)
C.L.B. Co., Houston, Tex.
Cambridge Filter Corp., Syracuse, N. Y. (replaceable cartridge)
Cuno Engineering Co., Meriden, Conn.
Drico Industrial Corp., Passaic, N. J.
Eaton Air Filter Co., Detroit, Mich.
Farr Co., Los Angeles, Calif.
Fiber Bond Corp., Chicago, Ill.
Filt-R-Ite Co., Chicago, Ill.
Flanders Filters, Inc., Riverhead, Long Island, N. Y. (special purpose filters)
Microtron Corp., Charlotte, N. C.
Mine Safety Appliances Co., Pittsburgh, Pa.
Owens-Corning Fiberglas Corp., Toledo, O.
Pittsburgh Plate Glass Co., Pittsburgh, Pa.
Pollen Ex Co., Chicago, Ill.
Standard Asbestos Mfg. Co., Chicago, Ill.
Technical Filter Co., Chicago, Ill.
Wilson & Co., Inc., Chicago, Ill.

FILTERS FOR OIL BURNERS

Andale Co., Philadelphia, Pa.
Anderson Brass Co., Detroit, Mich.
Barclay, Inc., Robert, Chicago, Ill.
Bendix Filter Div., Bendix Aviation Corp., Madison Heights, Mich.
Commercial Filters Corp., Melrose, Mass.
Cuno Engineering Corp., Meriden, Conn.
Delavan Mfg. Co., West Des Moines, Ia.
Eddington Metal Specialty Co., Eddington, Pa.
Fram Corp., Providence, R. I.
General Filters, Inc., Novi, Mich.
Hauck Mfg. Co., Brooklyn, N. Y.
Hilliard Corp., Elmira, N. Y.
Kraissl Co., Inc., The, Hackensack, N. J.
Marvel Engineering Co., Chicago, Ill.
McIntire Co., The, Livingston, N. J.
Morse-Smith-Morse Co., The, Watertown, Mass.
Newark Wire Cloth Co., Newark, N. J.
Norwood Products Co., Div. of A. R. Wood Mfg. Co., Luverne, Minn.
Pacific States Felt & Mfg. Co., San Francisco, Calif.
Purolator Products, Inc., Rahway, N. J.
Rega Mfg. Co., Rochester, N. Y.
Sette Products Co., Oakland, Calif.
Sparkler Mfg. Co., Mundelein, Ill.
Unifilter Co., Novi, Mich.
W. G. B. Oil Clarifier, Inc., Kingston, N. Y.
Winslow Engineering & Mfg. Co., Oakland, Calif.
Wix Corp., Gastonia, N. C.
Wood Mfg. Co., A. R., Luverne, Minn.

FILTERS, ODOR

See Adsorbers, Odor, for Duct Systems

FILTERS, PIPE LINE

A-P Controls Div., Controls Co. of America, Milwaukee, Wis.
Adams Co., Inc., R. P., Buffalo, N. Y.
Airaterra (Roylyn Products), Glendale, Calif.
Air-Maze Corp., Cleveland, O.
American Air Filter Co., Inc., Louisville, Ky.
American Meter Co., Inc., Philadelphia, Pa.
Andale Co., Philadelphia, Pa.
Anders Lykens Corp., Div. of Milton Roy Co., Philadelphia, Pa.
Anderson Co., V. D., The, Div. of International Basic Economy Corp., Cleveland, O.
Barnstead Still & Fertilizer Co., Boston, Mass.
Bendix Filter Div., Bendix Aviation Corp., Madison Heights, Mich.
CCA Products, Inc., Glendale, Calif.
Commercial Filters Corp., Melrose, Mass.
Conoflow Corp., Subsidiary of Walworth Co., Philadelphia, Pa.
Croll-Reynolds Engineering Co., Inc., New York, N. Y.
Cuno Engineering Corp., Meriden, Conn.
Danielson Mfg. Co., Danielson, Conn.
DeVilbiss Co., The, Toledo, O.
Dollinger Corp., Rochester, N. Y.
Eddington Metal Specialty Co., Eddington, Pa.
Emco Pneumatic Corp., Des Moines, Ia.
Filtrine Mfg. Co., Inc., Waldwick, N. J.
Fisher Governor Co., Marshalltown, Ia.
Fram Corp., Providence, R. I.
Gas & Oil Industry Laboratories, Inc., Irvington, N. J.
General Filters, Inc., Novi, Mich.
Harman Equipment Co., Los Angeles, Calif.
Kaye & MacDonald, Inc., West Orange, N. J.
Kraissl Co., Inc., The, Hackensack, N. J.
Ladish Co., Tri-Clover Div., Kenosha, Wis.
Marvel Engineering Co., Chicago, Ill.
McIntire Co., The, Livingston, N. J.
Micro Metallic Corp., Glen Cove, N. Y.
Moraine Products Div., General Motors Corp., Dayton, O. (Porous metal)
Newark Wire Cloth Co., Newark, N. J.
Norgren Co., C. A., Englewood, Colo.
Norwalk Valve Div., Eclipse Fuel Engineering Co., Rockford, Ill.
OPW Corp., Cincinnati, O.
Patrol Valve Co., The, Cleveland, O.
Porous Plastic Filter Co., Glen Cove, N. Y.
Purolator Products, Inc., Rahway, N. J.
Ronningen-Petter Co., Vicksburg, Mich.
Schroeder Brothers Corp., McKees Rocks, Pa.
Scientific Instrument Co., Detroit, Mich.
Selas Corp. of America, Dresher, Pa.
Sethco Mfg. Co., Merrick, N. Y.
Standard Machine & Mfg. Co., St. Louis, Mo.
Trerice Co., Detroit, Mich.
Tryco Products, Inc., Westfield, Mass.
Unifilter Co., Novi, Mich.
Warner Lewis Co., Div. of Fram Corp., Tulsa, Okla.
Watts Regulator Co., Lawrence, Mass.
Winslow Engineering & Mfg. Co., Oakland, Calif.
Worthington Corp., East Orange, N. J.

FILTERS, REFRIGERANT

A-P Controls Div., Controls Co. of America, Milwaukee, Wis.
Bendix Filter Div., Bendix Aviation Corp., Madison Heights, Mich.
Commercial Filters Corp., Melrose, Mass.
Cuno Engineering Corp., Meriden, Conn.
Dollinger Corp., Rochester, N. Y.
Hannifin Corp., DesPlaines, Ill.
Henry Valve Co., Melrose Park, Ill.
Imperial Brass Mfg. Co., Chicago, Ill.
Kenmore Machine Products, Inc., Lyons, N. Y.
Madden Brass Products Co., Aurora, Ill.
McIntire Co., The, Livingston, N. J.
Moraine Products Div., General Motors Corp., Dayton, O. (Porous metal)
Mueller Brass Co., Port Huron, Mich.
Newark Wire Cloth Co., Newark, N. J.
Phillips & Co., H. A., Chicago, Ill.
Porous Plastic Filter Co., Glen Cove, N. Y.
Purolator Products, Inc., Rahway, N. J.
Refrigeration Research, Inc., Brighton, Mich.
Remco, Inc., Zelienople, Pa.
Sealed Unit Parts Co., Inc., New York, N. Y.
Sporlan Valve Co., St. Louis, Mo.
Standard Machine & Mfg. Co., St. Louis, Mo.
Superior Valve and Fittings Co., Pittsburgh, Pa.
Vilter Mfg. Co., The, Milwaukee, Wis.
Wabash Corp., Chicago, Ill.

FILTERS, WATER

Adams Co., Inc., R. P., Buffalo, N. Y.
American Water Softener Co., Philadelphia.
American Well Works, Aurora, Ill.
Andale Co., Philadelphia, Pa.
Aquatrol Ferr-X Corp., Clifton, N. J.
Aquatrol Laboratories, Inc., Clifton, N. J.
Austin Engineering & Mfg. Co., Inc., Yaleta (El Paso County) Texas
Barnebey-Cheney Co., Columbus, O.
Belco Industrial Equipment Div., Bogue Electric Mfg. Co., Paterson, N. J.
Bendix Filter Div., Bendix Aviation Corp., Madison Heights, Mich.
Bruner Corp., Milwaukee, Wis.
Cochrane Corp., Philadelphia, Pa.
Commercial Filters Corp., Melrose, Mass.
Condenser Service & Engineering Co., Inc., Hoboken, N. J.
Croll-Reynolds Engineering Co., Inc., New York, N. Y.
Cuno Engineering Corp., Meriden, Conn.
Dearborn Chemical Co., Chicago, Ill.
Dollinger Corp., Rochester, N. Y.
Duriron Co., Inc., The, Dayton, O.
Duro Co., Dayton, O.
Eddington Metal Specialty Co., Eddington, Pa.
Elgin Softener Corp., Elgin, Ill.
Filtrine Mfg. Co., Inc., Waldwick, N. J.
Fram Corp., Providence, R. I.
Gelman Instrument Co., Chelsea, Mich. (for submicron filtration)
General Filter Co., Ames, Ia.
Graver Water Conditioning Co., New York, N. Y.
Greer Hydraulics, Inc., Jamaica, N. Y.
Harman Equipment Co., Los Angeles, Calif.
Henry Valve Co., Melrose Park, Ill.
Hilliard Corp., Elmira, N.Y.
Hungerford & Terry, Inc., Clayton, N. J.
Illinois Water Treatment Co., Rockford, Ill
Industrial Filter & Pump Co., Chicago, Ill.
Infilco, Inc., Tucson, Ariz.
Kaye & MacDonald, Inc., West Orange, N. J.
Kisco Boiler & Engineering Co., St. Louis.
Layne & Bowler, Inc., Memphis, Tenn.
Marvel Engineering Co., Chicago, Ill.
McIntire Co., The, Livingston, N. J.
Micro Metallic Corp., Glen Cove, N. Y.
Miller Mfg. Co., St. Paul, Minn.
Modern Div., George Getz Corp., Freeport, Ill.
Mueller Brass Co., Port Huron, Mich.
Newark Wire Cloth Co., Newark, N. J.
Norwood Associated Engineers Inc., Springfield, Mass.
Oshkosh Fiiter & Softener Co., Oshkosh, Wis.
Pace Inc., R.M., Indianapolis, Ind.
Permutit Co., Div. of Pfaudler Permutit, Inc., New York, N. Y.
Porous Plastic Filter Co., Glen Cove, N. Y.
Proportioneers, Inc., Div. of B-I-F Industries, Inc., Providence, R. I.
Pudlo Liquid Filters, Inc., New Holstein, Wis.
Purolator Products, Inc., Rahway, N. J.
Radiant Utilities Corp., Brooklyn, N. Y.
Red Jacket Mfg. Co., Davenport, Ia.
Reynolds Water Conditioning Co., Detroit, Mich.
Richmond Engineering Co., Richmond, Va.
Ronningen-Petter Co., Vicksburg, Mich.
Scharf Mfg. Co., J. H., Omaha, Nebr.
Selas Corp. of America, Dresher, Pa.
Smith Chemical Co., E. W., La Puente, Calif.
Sparkler Mfg. Co., Mundelein, Ill.
Standard Machine & Mfg. Co., St. Louis, Mo.
Stover Water Softener Co., St. Charles, Ill.
Tryco Products, Inc., Westfield, Mass.
Uniflow Mfg. Co., Erie, Pa.
Valley Foundry & Machine Works, Inc., Fresno, Calif.
Winslow Engineering & Mfg. Co., Oakland, Calif.
Worthington Corp., East Orange, N. J.

FINNED TUBING

See Tubing, Finned

FIRE EXTINGUISHING SYSTEMS

See Systems, Fire Extinguishing

FIRE PUMPS

See Pumps, Fire

FIRE VALVES AND VENTILATORS

See Ventilators, Roof, with Fusible Links

FITTINGS, ALUMINUM TUBE

Aeroquip Corp., Jackson, Mich.
Afco Fitting Co., Div. of Curtis Mfg. Co., Cleveland, O.
Airaterra (Roylyn Products), Glendale, Calif.
Anderson Metals Corp., Kansas City, Mo.
Crawford Fitting Co., Cleveland, O.
Flodar Corp., Cleveland, O.
Imperial Brass Mfg. Co., Chicago, Ill.

Parker-Hannifin Corp., Tube & Hose Fittings Div., Cleveland, O.
Swepco Tube Corp., Clifton, N. J.

FITTINGS, BLOW PIPE

Allington & Curtis Mfg. Co., Saginaw, Mich.
American Blow Pipe Co., Chicago, Ill. (tapers, tees, elbows, etc.)
Carolina Blower Co., Inc., Greensboro, N. C.
Chicago Metal Mfg. Co., Chicago, Ill.
Day Co., The, Minneapolis, Minn.
DeVilbiss Metal Fabricators Co., Detroit, Mich.
Goethel Sheet Metal Works, Inc., Alfred, Milwaukee, Wis.
Griffin & Co., Louisville, Ky.
Kice Metal Products Co., Wichita, Kans.
Kirk & Blum Mfg. Co., Cincinnati, O.
Newcomb-Detroit Co., Detroit, Mich.
Puhl & Hepper Mfg. Co., Inc., St. Louis, Mo.
Research Vacuum Supply Co., Chicago, Ill.
St. Louis Blow Pipe & Heater Co., Div. of Young Sales Corp., St. Louis, Mo.
Schmieg Industries, Inc., Detroit, Mich.
Torit Mfg. Co., St. Paul, Minn.
United Sheet Metal Co., Inc., Columbus, O.
United States Register Co., Battle Creek, Mich.
Wer-Coy Fabrication Co., Detroit, Mich.
Winkler & Sons, Inc., A. E., Milwaukee, Wis.
Young & Bertke Co., Cincinnati, O.

FITTINGS AND BUSHINGS, FUEL OIL TANK; ALARMS, LIQUID LEVEL

Anderson Metals Corp., Kansas City, Mo.
Barclay, Inc., Robert, Chicago, Ill.
Flagg & Co., Inc., Stanley G., Philadelphia.
Jordan Corp., Div. of OPW Corp., Cincinnati, O.
OPW Corp., Cincinnati, O.
Oil Equipment Mfg. Corp., New Haven, Conn.
Span Brass Mfg. Co., Otsego, Mich.
U. S. Plug & Fitting Co., Wellington, O.

FITTINGS FOR CENTRAL VACUUM CLEANING SYSTEMS

H-P Products, Inc., Louisville, O.
Pullman Vacuum Cleaner Co., Boston, Mass.
Spencer Turbine Co., Hartford, Conn.

FITTINGS, COPPER TUBE, COMPRESSION

Acheson Mfg. Co., Rankin, Pa.
Afco Fitting Co., Div. of Curtis Mfg. Co., Cleveland, O.
American Brass Co., Waterbury, Conn.
American Sanitary Mfg. Co., Abingdon, Ill.
Anderson Brass Co., Detroit, Mich.
Anderson Metals Corp., Kansas City, Mo.
Baker & Co., R. H., Los Angeles, Calif.
Chase Brass & Copper Co., Waterbury, Conn.
Chicago Forging and Mfg. Co., Chicago, Ill.
Commonwealth Brass Corp., Detroit, Mich.
Couplings Co., Chicago, Ill.
Dresser Mfg. Div., Dresser Industries, Inc., Bradford, Pa.
Eagle Copper Products Co., Inc., Brooklyn, N. Y.
Flodar Corp., Cleveland, O.
Hays Mfg. Co., Erie, Pa.
Imperial Brass Mfg. Co., Chicago, Ill.
Lunkenheimer Co., Cincinnati, O.
Madden Brass Products Co., Aurora, Ill.
Mueller Brass Co., Port Huron, Mich.
Parker-Hannifin Corp., Tube & Hose Fittings Div., Cleveland, O.
Sall Bros. Co., Rockford, Ill.
Scovill Mfg. Co., Waterbury, Conn.
Span Brass Mfg. Co., Otsego, Mich.
Wabash Corp., Chicago, Ill.
Weatherhead Co., Ft. Wayne Div., Ft. Wayne, Ind.

FITTINGS, COPPER TUBE, FLARED

Acheson Mfg. Co., Rankin, Pa.
Afco Fitting Co., Div. of Curtis Mfg. Co., Cleveland, O.
American Brass Co., Waterbury, Conn.
Anderson Brass Co., Detroit, Mich.
Anderson Metals Corp., Kansas City, Mo.
Chase Brass & Copper Co., Waterbury, Conn.
Commonwealth Brass Corp., Detroit, Mich.
Couplings Co., Chicago, Ill.
Flodar Corp., Cleveland, O.
Gardiner Metal Co., Chicago, Ill.
Hays Mfg. Co., Erie, Pa.
Imperial Brass Mfg. Co., Chicago, Ill.
Lunkenheimer Co., Cincinnati, O.
Madden Brass Products Co., Aurora, Ill.
McDonald Mfg. Co., A. Y., Dubuque, Ia.
Mueller Co., Decatur, Ill.
Mueller Brass Co., Port Huron, Mich.
Nibco, Inc., Elkhart, Ind.
Parker-Hannifin Corp., Tube & Hose Fittings Div., Cleveland, O.
Phoenix Brass Fittings Corp., Irvington, N. J.
Remco, Inc., Zelienople, Pa.
Scovill Mfg. Co., Waterbury, Conn.
Span Brass Mfg. Co., Otsego, Mich.
Superior Valve and Fittings Co., Pittsburgh, Pa.
Weatherhead Co., Ft. Wayne Div., Ft. Wayne, Ind.

FITTINGS, COPPER TUBE, SOLDER

Acheson Mfg. Co., Rankin, Pa.
American Brass Co., Waterbury, Conn.
American Sanitary Mfg. Co., Abingdon, Ill.
Chase Brass & Copper Co., Waterbury, Conn.
Commonwealth Brass Corp., Detroit, Mich.
Crane Co., Chicago, Ill.
Elkhart Products Corp., Elkhart, Ind.
Flagg & Co., Inc., Stanley G., Philadelphia, Pa.
Gardiner Metal Co., Chicago, Ill.
General Fittings Co., East Greenwich, R. I.
Gerry Tool Co., Bristol, Conn.
Grabler Mfg. Co., Cleveland, O.
Hubbell Corp., Mundelein, Ill.
Mueller Brass Co., Port Huron, Mich.
Nibco, Inc., Elkhart, Ind.
Phoenix Brass Fittings Corp., Irvington, N. J.
Span Brass Mfg. Co., Otsego, Mich.
Superior Valve & Fittings Co., Pittsburgh, Pa.
Union Metal Works Co., Inc., Chelsea, Mass.
Walworth Co., New York, N. Y. (silver brazed)

FITTINGS, DRAINAGE, FIXED AIR BREAK

Beaton & Cadwell Mfg. Co., New Britain, Conn.
Crane Co., Chicago, Ill.
Zurn Industries, Inc., Erie, Pa.

FITTINGS, EXHAUST, GARAGE, FOR ATTACHING CAR EXHAUST PIPE

American Metal Hose Div., The American Brass Co., Waterbury, Conn.
Ammerman Co., Inc., Stillwater, Minn.
Engwald Corp., The, Inwood, Long Island, N. Y.
Kent-Moore Organization, Inc., Warren, Mich.
National System of Garage Ventilation, Inc., Decatur, Ill.
Wendt Co., O. A., Chicago, Ill.

FITTINGS, HOSE TO PIPE

Acheson Mfg. Co., Rankin, Pa.
Aeroquip Corp., Jackson, Mich.
Afco Fitting Co., Div. of Curtis Mfg. Co., Cleveland, O.
Airaterra (Roylyn Products), Glendale, Calif.
Allen Mfg. Co., W. D., Bellwood, Ill.
American Sanitary Mfg. Co., Abingdon, Ill. (for polyethylene plastic tubing)
Anchor Coupling Co., Inc., Libertyville, Ill.
Band-It Co., Denver, Colo.
Boston Woven Hose & Rubber Co., Div of American Biltrite Rubber Co., Cambridge, Mass.
Dole Refrigerating Co., Chicago, Ill.
Flodar Corp., Cleveland, O.
Goodall Rubber Co., Trenton, N. J.
Goodrich Industrial Products Co., B. F., Akron, O.
Hewitt-Robins, Inc., Stamford, Conn.
Jaco Mfg. Co., Cleveland, O. (nylon compression tube fitting)
Jordan Corp., Div. of OPW Corp., Cincinnati, O.
LE-HI Div., Hose Accessories Co., Philadelphia, Pa.
Lenz Co., Dayton, O.
Mic-Lin Co., Maple Shade, N. J.
Sawhill Tubular Products, Inc., Sharon, Pa.
Span Brass Mfg. Co., Otsego, Mich.
Superior Valve & Fittings Co., Pittsburgh, Pa.
United States Rubber Co., New York, N. Y.
Weatherhead Co., Ft. Wayne Div., Ft. Wayne, Ind.

FITTINGS, HOT WATER HEATING SYSTEMS, ONE PIPE

American Tube Products, Inc., West Warwick, R. I.
Autostributor Co., Lansing, Mich. (manifold for connecting radiator branches)
Bell & Gossett Co., Morton Grove, Ill.
Bernstrom, Inc., C. R., Providence, R. I.
Dunham-Bush, Inc., West Hartford, Conn.
Hoffman Specialty Mfg. Corp., Indianapolis, Ind.
Kehm Corp., The, Chicago, Ill.
Mel Products Co., The, East Haven, Conn.
Panel Heat, Inc., Copiague, N. Y.
Sall Bros. Co., Rockford, Ill.
Span Brass Mfg. Co., Otsego, Mich.
Sullivan Valve & Engineering Co., Butte, Mont.
Taco Heaters, Inc., Cranston, R. I.
Thrush & Co., H. A., Peru, Ind.
Trane Co., The, LaCrosse, Wis.
Triplex Heating Specialty Co., Inc., Peru, Ind.

FITTINGS, LIFT

Sarco Co., Inc., New York, N. Y.
Sarcotherm Controls, Inc., New York, N. Y.
Webster & Co., Warren, Camden, N. J.

FITTINGS, LINED

American Hard Rubber Co., Div. of Amerace Corp., Butler, N. J. (Rubber)
American Smelting & Refining Co., Federated Metals Div., New York, N. Y.
Arco Products, Automotive Rubber Co., Detroit, Mich.
Barrows Porcelain Enamel Corp., Cincinnati, O. (glass, ceramic coated)
Bart Mfg. Corp., Belleville, N. J.
Cement Lined Pipe Co., Lynn, Mass. (Lead and tin)
Division Lead Co., Summit, Ill. (lead)
Gates Engineering Co., Wilmington, Del.
General Ceramics Corp., Keasbey, N. J. (ceramics & graphite)
Goodrich Industrial Products Co., B. F., Akron, O.
Heil Process Equipment Corp., Cleveland, O.
Knapp Mills, Inc., Long Island City, N. Y.
LaFavorite Rubber Mfg. Co., Hawthorne, N. J.
Lead Lined Iron Pipe Co., Wakefield, Mass. (Lead and tin)
Luzerne Rubber Co., Trenton, N. J. (hard rubber)
Marquette Coppersmithing Co., Philadelphia.
Michigan Pipe Co., Ferndale, Mich. (Wood, saraloy)
National Lead Co., New York, N. Y. (Lead)
Nazar Rubber Co., Toledo, O.
Nibco, Inc., Elkhart, Ind. (Tinned)
Raybestos-Manhattan, Inc., Passaic, N. J. (Rubber)
Resisto Pipe & Valve Co., East Cambridge, Mass. (lead)
Saran Lined Pipe Co., Ferndale, Mich. (saran lined)
Shahmoon Industries, Inc., Warren Foundry & Pipe Div., New York, N. Y. (cement)
United States Rubber Co., New York, N. Y. (Rubber)

FITTINGS, PIPE, ALUMINUM

Afco Fitting Co., Div. of Curtis Mfg. Co., Cleveland, O.
Airaterra (Roylyn Products), Glendale, Calif.
Aluminum Co. of America, Pittsburgh, Pa.
American Flow Control Corp., Houston, Tex.
Bonney Forge & Tool Wks., Allentown, Pa.
Chemiquip Co., New York, N. Y.
Flowline Corp., New Castle, Pa.
Jordan Corp., Div. of OPW Corp., Cincinnati, O.
Ladish Co., Cudahy, Wis.
Nuclear & Power Equipment Corp., S. San Francisco, Calif.
Parks-Cramer Co., Fitchburg, Mass. (jacketed)
Pittsburgh Brass Mfg. Co., Pittsburgh, Pa.
Ryerson & Son, Inc., Joseph T., Chicago, Ill.

Swepco Tube Corp., Clifton, N. J.
Taylor Forge & Pipe Wks., Chicago, Ill.
Tube Turns Div. of Chemetron Corp., Louisville, Ky. (welding)
Victaulic Co. of America, Elizabeth, N. J.
Youngstown Welding & Engineering Co., Youngstown, O.

FITTINGS, PIPE, BRASS, THREADED

Acheson Mfg. Co., Rankin, Pa.
Aeroquip, Inc., Van Wert, O.
Afco Fitting Co., Div. of Curtis Mfg. Co., Cleveland, O.
Airaterra (Roylyn Products), Glendale, Calif.
American Manganese Bronze Co., Philadelphia, Pa.
American Sanitary Mfg. Co., Abingdon, Ill.
Anchor Coupling Co., Inc., Libertyville, Ill.
Anderson Brass Co., Detroit, Mich.
Anderson Metals Corp., Kansas City, Mo.
Baker & Co., R. H., Los Angeles, Calif.
Bonney Forge & Tool Wks., Allentown, Pa.
Chase Brass & Copper Co., Waterbury, Conn.
Commonwealth Brass Corp., Detroit, Mich.
Couplings Co., Chicago, Ill.
Crane Co., Chicago, Ill.
Flagg & Co., Inc., Stanley G., Philadelphia, Pa.
Flodar Corp., Cleveland, O.
Gilbert Brass Foundry Co., St. Louis, Mo.
Hoffman Specialty Mfg. Corp., Indianapolis, Ind.
Imperial Brass Mfg. Co., Chicago, Ill.
Jordan Corp., Div. of OPW Corp., Cincinnati, O.
Ken-Ray Brass Products, Inc., Vermont, Ill.
Kerotest Mfg. Co., Pittsburgh, Pa.
Ladish Co., Cudahy, Wis.
Leavitt Machine Co., Orange, Mass.
Madden Brass Products Co., Aurora, Ill.
McDonald Mfg. Co., A. Y., Dubuque, Ia.
Mueller Brass Co., Port Huron, Mich.
New York Brass Fdry., New York, N. Y.
Parker-Hannifin Corp., Tube & Hose Fittings Div., Cleveland, O.
Penn Mfg. Corp. of Washington, Pa., Washington, Pa.
Phoenix Brass Fittings Corp., Irvington, N. J.
Pittsburgh Brass Mfg. Co., Pittsburgh, Pa.
Span Brass Mfg. Co., Otsego, Mich.
Superior Valve & Fittings Co., Pittsburgh, Pa.
U. S. Plug & Fitting Co., Wellington, O. (pipe plugs)
Union Metal Works Co., Inc., Chelsea, Mass.
Walworth Co., New York, N. Y. (Brazed)
Weatherhead Co., The, Ft. Wayne Div., Ft. Wayne, Ind.

FITTINGS, PIPE, BRASS, WELDING

Airaterra (Roylyn Products), Glendale, Calif.
Bonney Forge & Tool Wks., Allentown, Pa.
Chase Brass & Copper Co., Waterbury, Conn.
Ladish Co., Cudahy, Wis.
Midwest Piping Co., Inc., St. Louis, Mo.
Nuclear & Power Equipment Corp., S. San Francisco, Calif.
Span Brass Mfg. Co., Otsego, Mich.
Taylor Forge & Pipe Works, Chicago, Ill.
Tube Turns Div. of Chemetron Corp., Louisville, Ky.

FITTINGS, PIPE, BRONZE, BRAZED

Acheson Mfg. Co., Rankin, Pa.
Bonney Forge & Tool Works, Allentown, Pa.
Chase Brass & Copper Co., Waterbury, Conn.
Flagg & Co., Inc., Stanley G., Philadelphia, Pa.
Union Metal Works Co., Inc., Chelsea, Mass.
Walworth Co., New York, N. Y.

FITTINGS, PIPE, BRONZE, SOLDER

Acheson Mfg. Co., Rankin, Pa.
Chase Brass & Copper Co., Waterbury, Conn.
Crane Co., Chicago, Ill.
Flagg & Co., Inc., Stanley G., Philadelphia, Pa.
General Fittings Co., East Greenwich, R. I.
Gilbert Brass Foundry Co., St. Louis, Mo.
Grabler Mfg. Co., Cleveland, O.
Hoffman Specialty Mfg. Corp., Indianapolis, Ind.

Hubbell Corp., Mundelein, Ill.
Mueller Brass Co., Port Huron, Mich.
Nibco, Inc., Elkhart, Ind.
Panel Heat, Inc., Copiague, N. Y.
Phoenix Brass Fittings Corp., Irvington, N. J.
Union Metal Works Co., Inc., Chelsea, Mass.

FITTINGS, PIPE, CAST IRON, FLANGED

Alabama Pipe Co., Anniston, Ala.
American Cast Iron Pipe Co., Birmingham, Ala.
Clow & Sons, Inc., James B., Chicago, Ill.
Crane Co., Chicago, Ill.
Dersch, Gesswein & Neuert, Inc., Chicago, Ill.
Duriron Co., Inc., The, Dayton, O. (Acid resisting)
Frick Co., Waynesboro, Pa.
Goodall Rubber Co., Trenton, N. J.
Grinnell Co., Inc., Providence, R. I.
Henry Valve Co., Melrose Park, Ill.
Hubbell Corp., Mundelein, Ill.
Kuhns Bros. Co., Dayton, O.
Leavitt Machine Co., Orange, Mass.
Lynchburg Foundry Co., Lynchburg, Va.
M & H Valve & Fittings Co., Div. of Walworth Co., Anniston, Ala.
Malleable Iron Fittings Co., Branford, Conn.
National Valve & Mfg. Co., Pittsburgh, Pa.
Parks-Cramer Co., Fitchburg Mass. (Jacketed)
Pittsburgh Piping & Equipment Co., Pittsburgh, Pa.
Shahmoon Industries, Inc., Warren Foundry & Pipe Div., New York, N. Y.
Stockham Valves & Fittings, Birmingham, Ala.
United States Pipe & Foundry Co., Birmingham, Ala.
Vilter Mfg. Co., The, Milwaukee, Wis.
Walworth Co., New York, N. Y.

FITTINGS, PIPE, CAST IRON, MECHANICAL JOINT

Alabama Pipe Co., Anniston, Ala.
American Cast Iron Pipe Co., Birmingham, Ala.
Clow & Sons, Inc., James B., Chicago, Ill.
Grinnell Co., Inc., Providence, R. I.
Inner-Tite Div. of Yara Engineering Corp., Elizabeth, N. J.
Lynchburg Foundry Co., Lynchburg, Va.
McWane Cast Iron Pipe Co., Birmingham, Ala.
Shahmoon Industries, Inc., Warren Foundry & Pipe Div., New York, N. Y.

FITTINGS, PIPE, CAST IRON, THREADED

Clow & Sons, Inc., James B., Chicago, Ill.
Crane Co., Chicago, Ill.
Dersch, Gesswein & Neuert, Inc., Chicago, Ill.
Flagg & Co., Inc., Stanley G., Philadelphia, Pa.
Frick Co., Waynesboro, Pa.
Grabler Mfg. Co., Cleveland, O.
Grinnell Co., Inc., Providence, R. I.
Hubbell Corp., Mundelein, Ill.
Illinois Malleable Iron Co., Chicago, Ill.
Kuhns Bros. Co., Dayton, O.
Leavitt Machine Co., Orange, Mass.
Malleable Iron Fittings Co., Branford, Conn.
Ravena Iron Co., Ravena, N. Y.
Rich Mfg. Co. of California, Los Angeles, Calif.
Stockham Valves & Fittings, Birmingham, Ala.
U. S. Plug & Fitting Co., Wellington, O. (pipe plug)
Union Malleable Mfg. Co., Ashland, O.
Vilter Mfg. Co., The, Milwaukee, Wis.
Walworth Co., New York, N. Y.
Ward Foundries, Inc., J. P., Blossburgh, Pa.
Zurn Industries, Inc., Erie, Pa.

FITTINGS, PIPE, COMPRESSION

Afco Fitting Co., Div. of Curtis Mfg. Co., Cleveland, O.
Baker & Co., R. H., Los Angeles, Calif.
Chase Brass & Copper Co., Waterbury, Conn.
Cooper Alloy Corp., Hillside, N. J.
Dresser Mfg. Div., Dresser Industries, Inc., Bradford, Pa.
Guardian Products Corp., Michigan City, Ind.
Hays Mfg. Co., Erie, Pa.
McDonald Mfg. Co., A. Y., Dubuque, Ia.

Telsco Fittings Div., Dallas, Tex.
Tru-Seal Div., Flick-Reedy Corp., Melrose Park, Ill.
York Corp., Subsidiary of Borg-Warner Corp., York, Pa.

FITTINGS, PIPE, FIBER

Brown Co., Boston, Mass.
Central Foundry Co., Newark, N. J.

FITTINGS, PIPE, HARD RUBBER

American Flow Control Corp., Houston, Tex.
American Hard Rubber Co., Div. of Amerace Corp., Butler, N. J.
Gates Engineering Co., Wilmington, Del.
Goodrich Industrial Products Co., B. F., Akron, O.
LaFavorite Rubber Mfg. Co., Hawthorne, N. J.
Luzerne Rubber Co, Trenton, N. J.
Nazar Rubber Co., Toledo, O.
United States Rubber Co., New York, N. Y.
Vanton Pump & Equipment Corp., Hillside, N. J.

FITTINGS, PIPE, JACKETED

Albert Pipe Supply Co., Inc., Brooklyn, N. Y.
Devine Mfg. Co., Inc., J. P., Pittsburgh, Pa.
Hetherington & Berner, Inc., Indianapolis, Ind.
Nuclear & Power Equipment Corp., S. San Francisco, Calif.
Parks-Cramer Co., Fitchburg, Mass.
Red Jacket Co., Inc., Carnegie, Pa.
Youngstown Welding & Engineering Co., Youngstown, O.

FITTINGS, PIPE, LEAD

Alpha Metals, Inc., Jersey City, N. J.
American Smelting & Refining Co., Federated Metals Div., New York, N. Y.
Anchor Metal Co., Inc., Brooklyn, N. Y.
Bunker Hill Co., The, Sales & Fabrication Div., Seattle, Wash.
Division Lead Co., Summit, Ill.
Flemm Lead Co., Inc., Long Island City, N. Y.
Heil Process Equipment Corp., Cleveland, O.
Knapp Mills, Inc., Long Island City, N. Y.
Lead Lined Iron Pipe Co., Wakefield, Mass.
Leavitt Machine Co., Orange, Mass.
McDonald Mfg. Co., A. Y., Dubuque, Ia.
Mueller Co., Decatur, Ill.
National Lead Co., New York, N. Y.
Resisto Pipe & Valve Co., East Cambridge, Mass.
Rochester Lead Works, Inc., Rochester, N. Y.

FITTINGS, PIPE, MALLEABLE

Corley Co., Inc., The, Plainville, Conn.
Crane Co., Chicago, Ill.
Fairbanks Co., The, New York, N. Y.
Fanner Mfg. Co., The, Cleveland, O.
Flagg & Co., Inc., Stanley G., Philadelphia, Pa.
Grabler Mfg. Co., Cleveland, O.
Grinnell Co., Inc., Providence, R. I.
Illinois Malleable Iron Co., Chicago, Ill.
James Mfg. Co., Ft. Atkinson, Wis.
Malleable Iron Fittings Co., Branford, Conn.
Pacific Fittings Div., General Metals Corp., Hollydale, Calif.
Stockham Valves & Fittings, Birmingham, Ala.
Telesco Fittings Div., Dallas, Tex.
U. S. Plug & Fitting Co., Wellington, O. (pipe plugs)
Union Malleable Mfg. Co., Ashland, O.
Union Pipe Fitting Co., Fort Atkinson, Wis
Vitaulic Co. of America, Elizabeth, N. J.
Walworth Co., New York, N. Y.
Ward Foundries, Inc. J. P., Blossburgh, Pa.

FITTINGS, PIPE, MALLEABLE, BRAZED

Flagg & Co., Inc., Stanley G., Philadelphia, Pa.

FITTINGS, PIPE, NICKEL AND NICKEL ALLOY

American Manganese Bronze Co., Philadelphia, Pa.
Bart Mfg. Corp., Belleville, N. J.
Bonney Forge & Tool Wks., Allentown, Pa.
Cooper Alloy Corp., Hillside, N. J.
Crane Co., Chicago, Ill.

Electric Steel Foundry Co., Portland, Ore.
Flowline Corp., New Castle, Pa.
Haynes Stellite Co., Div. of Union Carbide Corp., New York, N. Y.
International Nickel Co., Inc., The, New York, N. Y.
Ladish Co., Cudahy, Wis.
Ladish Co., Tri-Clover Div., Kenosha, Wis.
Midwest Piping Co., Inc., St. Louis, Mo.
Nuclear & Power Equipment Corp., S. San Francisco, Calif.
Parks-Cramer Co., Fitchburg, Mass. (jacketed)
Penn Mfg. Corp. of Washington, Pa., Washington, Pa.
Porter Co., Inc., H. K., Forge & Fittings Div., W-S Fittings Wks., Roselle, N. J.
Swepco Tube Corp., Clifton, N. J.
Taylor Forge & Pipe Wks., Chicago, Ill.
Tube Turns Div. of Chemetron Corp., Louisville, Ky. (welding)
Walworth Co., New York, N. Y.
Youngstown Welding & Engineering Co., Youngstown, O.

FITTINGS, PIPE, NICKEL PLATED

Acheson Mfg. Co., Rankin, Pa.
Bart Mfg. Corp., Belleville, N. J.
Taylor Forge & Pipe Wks., Chicago, Ill.

FITTINGS, PIPE, NYLON

Crescent Plastics, Inc., Evansville, Ind.
Nylon Moulding Corp., Garwood, N. J.
Wheeling Machine Products Co., Wheeling, W. Va.

FITTINGS, PIPE, PLASTIC

Albert Pipe Supply Co., Inc., Brooklyn, N. Y.
Alpha Plastics, Inc., Livingston, N. J. (PVC)
American Agile Corp., Bedford, O.
American Flow Control Corp., Houston, Tex.
American Hard Rubber Co., Div. of Amerace Corp., Butler, N. J.
Anesite Co., Chicago, Ill.
Argo Plastic Products, Cleveland, O.
Associated Plastic Co's., Inc., Midland, Mich. (rigid polyvinyl)
Atlas Mineral Products Co., Mertztown, Pa.
Capitol Mfg. & Supply Co., Columbus, O.
Carlon Products Corp., Cleveland, O.
Chesflex Div., St. Regis Paper Co., Yonkers, N. Y.
Colonial Plastics Mfg. Co., Industrial Div., Cleveland, O.
Commercial Plastics Co., Chicago, Ill.
Continental Can Co., Millsplastic Pipe Div., New York, N. Y.
Crane Co., Chicago, Ill.
Crescent Plastics, Inc., Evansville, Ind.
Danielson Mfg. Co., Danielson, Conn.
Dow Chemical Co., The, Midland, Mich. (saran-lined)
Evanite Plastic Co., Div. of the Evans Pipe Co., Uhrichsville, O.
Fibercast Co., Sand Spring, Okla.
Franklin Plastics, Inc., Franklin, Pa.
General Ceramics Corp., Keasbey, N.J.
Goodall Rubber Co., Trenton, N. J.
Goodrich Industrial Products Co., B. F., Akron, O.
Goodrich Industrial Products Co., B. F., Koroseal Div., Marietta, O. (PVC)
Grinnell Co., Inc., Providence, R. I.
Haveg Industries, Inc., Wilmington, Del.
Industrial Plastic Fabricators, Norwood, Mass. (PVC)
Industrial Plastic Fittings Co., Towson, Md.
Jaco Mfg. Co., Cleveland, O. (nylon compression tube fitting)
Johnson Plastics Corp., Chagrin Falls, O.
Kraloy Plastic Pipe Co., Inc., Los Angeles, Calif.
Luzerne Rubber Co., Trenton, N. J.
Mannesmann-Easton Plastic Products Co., Inc., Easton, Pa. (rigid unplasticized polyvinyl chloride)
Manufacturers Corp., Mansfield, O.
Moore & Co., Samuel, Mantua, O. (tubing)
Mueller Brass Co., Port Huron, Mich.
National Tube Div., United States Steel Corp., Pittsburgh, Pa.
Nelson Foundry Co., Morton Grove, Ill.
Orangeburg Mfg. Co., Orangeburg, N. Y.
Pipeline Coatings & Engineering Co., Los Angeles, Calif.
Plastex Co., Columbus, O.
Plastipipe, Products of Plastic Process Co., Div. of Monadnock Mills, Los Angeles, Calif.
Porter Co., Inc., H. K., Quaker Rubber Div., Philadelphia, Pa.
Protokap, Inc., Houston, Tex. (end caps)
Reflin Co., San Diego, Calif. (rigid, reinforced with glass fibers)
Republic Steel Corp., Cleveland, O.
Robinson Clay Product Co., The, Akron, O.
Ryerson & Son, Inc., Joseph T., Chicago, Ill.
S & C Mfg. Co., Cincinnati, O.
Saran Lined Pipe Co., Ferndale, Mich. (saran)
Seelye Craftsmen, The, Minneapolis, Minn.
Skyline Industries Sales, Inc., Titusville, Pa.
Sloane Mfg. Co., Sun Valley, Calif. (PVC, kralastic, butyrate)
Southwestern Plastic Pipe Co., Mineral Wells, Tex.
Stokes Molded Products, Div. of The Electric Storage Battery Co., Trenton, N. J. (unplasticized polyvinyl chloride)
Telsco Fittings Div., Dallas, Tex.
Tube Turns Plastics, Inc., Louisville, Ky. (injection molded PVC, and others)
United States Rubber Co., New York, N. Y.
United States Stoneware Co., New York, N. Y.
Vanton Pump & Equipment Corp., Hillside, N. J.
Victaulic Co. of America, Elizabeth, N. J.
Walworth Co., New York, N. Y.
Wheeling Machine Products Co., Wheeling, W. Va.
Yardley Plastics Co., Columbus, O.

FITTINGS, PIPE, SADDLE TEE

Babcock & Wilcox Co., Tubular Products Div., Beaver Falls, Pa.
Baker & Co., R. H., Los Angeles, Calif.
Bonney Forge & Tool Wks., Allentown, Pa.
Dresser Mfg. Div., Dresser Industries, Inc., Bradford, Pa.
Ladish Co., Cudahy, Wis.
Plastipipe, Products of Plastic Process Co., Div. of Monadnock Mills, Los Angeles, Calif.
Sall Bros. Co., Rockford, Ill.
Skinner Co., M. B., South Bend, Ind.
Superior Valve & Fittings Co., Pittsburgh, Pa.
Taylor Forge & Pipe Works, Chicago, Ill.
Tube Turns Div. of Chemetron Corp., Louisville, Ky. (welding)

FITTINGS, PIPE, SANITARY

Acheson Mfg. Co., Rankin, Pa.
Central Foundry Co., Newark, N. J.
Duriron Co., Inc., The, Dayton, O. (corrosion resisting)
Ladish Co., Tri-Clover Div., Kenosha, Wis.
Leavitt Machine Co., Orange, Mass.
Mueller Brass Co., Port Huron, Mich.
Robinson Clay Product Co., The, Akron, O.
Somerville Iron Works, Inc., Chattanooga, Tenn.
Stockham Valves & Fittings, Birmingham, Ala.
Union Malleable Mfg. Co., Ashland, O.
Union Metal Works Co., Inc., Chelsea, Mass.

FITTINGS, PIPE, SLIP-ON

Fibercast Co., Sand Spring, Okla.
Henry Valve Co., Melrose Park, Ill.
Hollaender Mfg. Co., Cincinnati, O.

FITTINGS, PIPE, SPECIAL FOR BASEBOARD RADIATION

General Fittings Co., East Greenwich, R. I.
Hoffman Specialty Mfg. Corp., Indianapolis, Ind.
Mueller Brass Co., Port Huron, Mich.
Nibco, Inc., Elkhart, Ind.
Panel Heat, Inc., Copiague, N. Y.
Rittling Corp., The, Buffalo, N. Y.
Union Metal Works Co., Inc., Chelsea, Mass.
Webster & Co., Warren, Camden, N. J.

FITTINGS, PIPE, STAINLESS STEEL

Afco Fitting Co., Div. of Curtis Mfg. Co., Cleveland, O.
Allmetal Screw Products Co., Inc., Garden City, Long Island, N. Y.
Alloy Stainless Products Co., Totowa, N. J.
American Flow Control Corp., Houston, Tex.
Babcock & Wilcox Co., Tubular Products Div., Beaver Falls, Pa.
Baker & Co., R. H., Los Angeles, Calif.
Bonney Forge & Tool Wks., Allentown, Pa.
Camco Fittings, Inc., North Haven, Conn.
Cooper Alloy Corp., Hillside, N. J.
Crane Co., Chicago, Ill.
Electric Steel Foundry Co., Portland, Ore.
Fabri-Valve Co. of America, Portland, Ore.
Flodar Corp., Cleveland, O.
Flowline Corp., New Castle, Pa.
Harrison Steel Corp., Brooklyn, N. Y.
Jordan Corp., Div. of OPW Corp., Cincinnati, O.
Ladish Co., Cudahy, Wis.
Ladish Co., Tri-Clover Div., Kenosha, Wis.
Nuclear & Power Equipment Corp., S. San Francisco, Calif.
Parks-Cramer Co., Fitchburg, Mass. (jacketed)
Penn Mfg. Corp. of Washington, Pa., Washington, Pa.
Pittsburgh Piping & Equipment Co., Pittsburgh, Pa.
Porter Co., Inc., H. K., Forge & Fittings Div., W-S Fittings Wks., Roselle, N. J.
Portland Cooper & Tank Wks., Inc., South Portland, Me.
Pypon Co., Pittsburgh, Pa.
Speedline Stainless Steel Fittings Div., Horace T. Potts Co., Philadelphia, Pa.
Swepco Tube Corp., Clifton, N. J.
Taylor Forge & Pipe Wks., Chicago, Ill.
Tru-Seal Div., Flick-Reedy Corp., Melrose Park, Ill.
Tube Turns Div. of Chemetron Corp., Louisville, Ky.
U. S. Plug & Fitting Co., Wellington, O. (pipe plugs)
Victaulic Co. of America, Elizabeth, N. J.
Wall Tube & Metal Products Co., Newport, Tenn.
Walworth Co., New York, N. Y.
Youngstown Welding & Engineering Co., Youngstown, O.

FITTINGS, PIPE, STAINLESS STEEL, WELDING

Babcock & Wilcox Co., Tubular Products Div., Beaver Falls, Pa.
Bonney Forge & Tool Wks., Allentown, Pa.
Camco Fittings, Inc., North Haven, Conn.
Cooper Alloy Corp., Hillside, N. J.
Electric Steel Foundry Co., Portland, Ore.
Fabri-Valve Co. of America, Portland, Ore.
Flowline Corp., New Castle, Pa.
Grinnell Co., Inc., Providence, R. I.
Heat & Power Corp., Baltimore, Md.
Ladish Co., Cudahy, Wis.
Midwest Piping Co., Inc., St. Louis, Mo.
Nuclear & Power Equipment Corp., S. San Francisco, Calif.
Penn Mfg. Corp. of Washington, Pa., Washington, Pa.
Porter Co., Inc., H. K., Forge & Fittings Div., W-S Fittings Wks., Roselle, N. J.
Ryerson & Son, Inc., Joseph T., Chicago, Ill.
Speedline Stainless Steel Fittings Div., Horace T. Potts Co., Philadelphia, Pa.
Swepco Tube Corp., Clifton, N. J.
Taylor Forge & Pipe Wks., Chicago, Ill.
Tube Turns Div. of Chemetron Corp., Louisville, Ky.
Walworth Co., New York, N. Y.
Youngstown Welding & Engineering Co., Youngstown, O.

FITTINGS, PIPE, STEEL, FLANGED

Alco Products, Inc., Schenectady, N. Y.
Babcock & Wilcox Co., Tubular Products Div., Beaver Falls, Pa.
Crane Co., Chicago, Ill.
Electric Steel Foundry Co., Portland, Ore.
Frick Co., Waynesboro, Pa.
Henry Valve Co., Melrose Park, Ill.
Kerotest Mfg. Co., Pittsburgh, Pa.
National Valve & Mfg. Co., Pittsburgh, Pa.
Naylor Pipe Co., Chicago, Ill.
Nuclear & Power Equipment Corp., S. San Francisco, Calif.
Parks-Cramer Co., Fitchburg, Mass. (jacketed)
Pipe Line Development Co., Cleveland, O.
R-P & C Valve Div., American Chain & Cable Co., Inc., Reading, Pa.
Semet-Solvay Engrg Div., Allied Chemical Corp., New York, N. Y.
Vilter Mfg. Co., The, Milwaukee, Wis.
Vogt Machine Co., Henry, Louisville, Ky.
Walworth Co., New York, N. Y.

FITTINGS, PIPE, STEEL, FORGED, THREADED

Alpha Plastics, Inc., Livingston, N. J. (PVC)
American Meter Co., Inc., Philadelphia, Pa.
Bonney Forge & Tool Works, Allentown, Pa.
Camco Fittings, Inc., North Haven, Conn.
Capitol Mfg. & Supply Co., Columbus, O.
Crane Co., Chicago, Ill.
Henry Valve Co., Melrose Park, Ill.
Hubbell Corp., Mundelein, Ill.
Kerotest Mfg. Co., Pittsburgh, Pa.
Ladish Co., Cudahy, Wis.
Nuclear & Power Equipment Corp., S. San Francisco, Calif.
Parker Hannifin Corp., Tube & Hose Fittings Div., Cleveland, O.
Penn Mfg. Corp. of Washington, Pa., Washington, Pa.
Porter Co., Inc., H. K., Forge & Fittings Div., W-S Fittings Wks., Roselle, N. J.
U. S. Pipe & Mfg. Co., S. San Francisco, Calif. (pipe plug)
Vilter Mfg. Co., The, Milwaukee, Wis.
Vogt Machine Co., Henry, Louisville, Ky.
Walworth Co., New York, N. Y.
Wheeling Machine Products Co., Wheeling, W. Va.

FITTINGS, PIPE, STEEL, SOCKET WELD

Alpha Plastics, Inc., Livingston, N. J. (PVC)
Bonney Forge & Tool Works, Allentown, Pa
Camco Fittings, Inc., North Haven, Conn.
Capitol Mfg. & Supply Co., Columbus, O
Crane Co., Chicago, Ill.
Electric Steel Foundry Co., Portland, Ore
Harrison Steel Corp., Brooklyn, N. Y
Henry Valve Co., Melrose Park, Ill
Hubbell Corp., Mundelein, Ill.
Ladish Co., Cudahy, Wis.
Nuclear & Power Equipment Corp., S. San Francisco, Calif.
Porter Co., Inc., H. K., Forge & Fittings Div., W-S Fittings Wks., Roselle, N. J.
Vilter Mfg. Co., The, Milwaukee, Wis.
Vogt Machine Co., Henry, Louisville, Ky.
Walworth Co., New York, N. Y.

FITTINGS, PIPE, STEEL, THREADED

Afco Fitting Co., Div. of Curtis Mfg. Co., Cleveland, O.
Bonney Forge & Tool Works, Allentown, Pa.
Camco Fittings, Inc., North Haven, Conn.
Capitol Mfg. & Supply Co., Columbus, O.
Crane Co., Chicago, Ill.
Flodar Corp., Cleveland, O.
Frick Co., Waynesboro, Pa.
Harrisburg Steel Co., Div. of Harsco Corp., Harrisburg, Pa.
Henry Valve Co., Melrose Park, Ill.
Hubbell Corp., Mundelein, Ill.
Ladish Co., Cudahy, Wis.
Le Had Mfg. Corp., Buffalo, N. Y.
Lenz Co., Dayton, O.
Nuclear & Power Equipment Corp., S. San Francisco, Calif.
Parker-Hannifin Corp., Tube & Hose Fittings Div., Cleveland, O.
Penn Mfg. Corp. of Washington, Pa., Washington, Pa.
Pittsburgh Pipe & Coupling Co., Allison Park, Pa.
Porter Co., Inc., H. K., Forge & Fittings Div., W-S Fittings Wks., Roselle, N. J.
Sawhill Tubular Products, Inc., Sharon, Pa.
Tru-Seal Div., Flick-Reedy Corp., Melrose Park, Ill.
Tubing Seal-Cap, Inc., San Gabriel, Calif. (plugs and caps)
Vilter Mfg. Co., The, Milwaukee, Wis.
Vogt Machine Co., Henry, Louisville, Ky.
Walworth Co., New York, N. Y.
Wheeling Machine Products Co., Wheeling, W. Va.

FITTINGS, PIPE, STEEL, WELDING

Armco Drainage & Metal Products, Inc., Welded Pipe Sales Div., Middletown, O.
Babcock & Wilcox Co., Tubular Products Div., Beaver Falls, Pa.
Beaird Co., J. B., Shreveport, La.
Bonney Forge & Tool Works, Allentown, Pa.
Camco Fittings, Inc., North Haven, Conn.
Crane Co., Chicago, Ill.
Dresser Mfg. Div., Dresser Industries, Inc., Bradford, Pa.
Electric Steel Foundry Co., Portland, Ore.
Grinnell Co., Inc., Providence, R. I.
Harrisburg Steel Co., Div. of Harsco Corp., Harrisburg, Pa.
Heat & Power Corp., Baltimore, Md.
Henry Valve Co., Melrose Park, Ill.
Hubbell Corp., Mundelein, Ill.
Jackson-Markus Supply Co., Los Angeles, Calif.
Ladish Co., Cudahy, Wis.
Midwest Piping Co., Inc., St. Louis, Mo.
National Valve & Mfg. Co., Pittsburgh, Pa.
Naylor Pipe Co., Chicago, Ill.
Nuclear & Power Equipment Corp., S. San Francisco, Calif.
O. T. M. Corp., Houston, Tex.
Penn Mfg. Corp. of Washington, Pa., Washington, Pa.
Pipe Line Development Co., Cleveland, O
Pittsburgh Piping & Equipment Co., Pittsburgh, Pa.
Semet-Solvay Engineering Div., Allied Chemical Crop., New York, N. Y.
Swepco Tube Corp., Clifton, N. J.
Taylor Forge & Pipe Wks., Chicago, Ill.
Tube Turns Div. of Chemetron Corp., Louisville, Ky.
Vilter Mfg. Co., The, Milwaukee, Wis.
Vogt Machine Co., Henry, Louisville, Ky.
Walworth Co., New York, N. Y.
Youngstown Welding & Engineering Co., Youngstown, O.

FITTINGS, PIPE, STEEL, WELDING, SEAMLESS

Babcock & Wilcox., Tubular Products Div., Beaver Falls, Pa.
Camco Fittings, Inc., North Haven, Conn
Crane Co., Chicago, Ill.
Grinnell Co., Inc., Providence, R. I.
Ladish Co., Cudahy, Wis.
Nibco, Inc., Elkhart, Ind.
Nuclear & Power Equipment Corp., S. San Francisco, Calif.
Penn Mfg. Corp. of Washington, Pa., Washington, Pa.
Special Screw Products, Bedford, O.
Taylor Forge & Pipe Wks., Chicago, Ill.
Tube Forgings of America, Inc., Portland, Ore.
Tube Turns Div. of Chemetron Corp., Louisville, Ky.
Walworth Co., New York, N. Y.

FITTINGS, PIPE, VITRIFIED CLAY

American Vitrified Products Co., Cleveland.
Straitsville Brick Co., New Straitsville, O.

FITTINGS, PIPE, WROUGHT IRON, WELDING

Albert Pipe Supply Co., Inc., Brooklyn, N. Y.
Babcock & Wilcox Co., Tubular Products Div., Beaver Falls, Pa.
Bonney Forge & Tool Works, Allentown, Pa.
Byers Co., A. M., Pittsburgh, Pa.
Dersch, Gesswein & Neuert, Inc., Chicago, Ill.
Grinnell Co., Inc., Providence, R. I.
Ladish Co., Cudahy, Wis.
Midwest Piping Co., Inc., St. Louis, Mo.
National Valve & Mfg. Co., Pittsburgh, Pa
Nuclear & Power Equipment Corp., S. San Francisco, Calif.
Penn Mfg. Corp. of Washington, Pa., Washington, Pa.
Taylor Forge & Pipe Wks., Chicago, Ill.
Tube Turns Div. of Chemetron Corp., Louisville, Ky.
Walworth Co., New York, N. Y.

FITTINGS, REFRIGERATION

Aeroquip, Inc., Van Wert, O.
American Brass Co., Waterbury, Conn.
Anderson Metals Corp., Kansas City, Mo.
Chase Brass & Copper Co., Waterbury, Conn.
Chicago Forging and Mfg. Co., Chicago, Ill.
Commonwealth Brass Corp., Detroit, Mich.
Crane Co., Chicago, Ill.
Dersch, Gesswein & Neuert, Inc., Chicago, Ill.
Flodar Corp., Cleveland, O.
Frick Co., Waynesboro, Pa.
Henry Valve Co., Melrose Park, Ill.
Imperial Brass Mfg. Co., Chicago, Ill.
Kerotest Mfg. Co., Pittsburgh, Pa.
Ladish Co., Cudahy, Wis.
Madden Brass Products Co., Aurora, Ill.
Mueller Brass Co., Port Huron, Mich.
Nibco, Inc., Elkhart, Ind.
Piper Tool Co., Inc., Roseville, Mich.
Porter Co., Inc., H. K., Forge & Fittings Div., W-S Fittings Wks., Roselle, N. J.
Remco, Inc., Zelienople, Pa.
Scovill Mfg. Co., Waterbury, Conn.
Span Brass Mfg. Co., Otsego, Mich.
Superior Valve & Fittings Co., Pittsburgh, Pa.
U. S. Plug & Fitting Co., Wellington, O. (pipe plugs)
Vilter Mfg. Co., Milwaukee, Wis.
Vogt Machine Co., Henry, Louisville, Ky.
Weatherhead Co., The, Ft. Wayne Div., Ft. Wayne, Ind.
X L Refrigerating Co., Chicago, Ill.
York Corp., Subsidiary of Borg-Warner Corp., York, Pa.

FITTINGS, STEEL TUBE, FLARED

Aeroquip, Inc., Van Wert, O.
Afco Fitting Co., Div. of Curtis Mfg. Co., Cleveland, O.
Airaterra (Roylyn Products), Glendale, Calif.
Couplings Co., Chicago, Ill.
Flodar Corp., Cleveland, O.
H-P Products, Inc., Louisville, O.
Imperial Brass Mfg. Co., Chicago, Ill.
Lenz Co., Dayton, O.
Parker-Hannifin Corp., Tube & Hose Fittings Div., Cleveland, O.
Pipe Tool Co., Inc., Roseville, Mich.
Special Screw Products, Bedford, O.
Swepco Tube Corp., Clifton, N. J.
Weatherhead Co., The, Ft. Wayne Div., Ft Wayne, Ind.

FITTINGS, STEEL TUBE, FLARELESS

Afco Fitting Co., Div. of Curtis Mfg. Co., Cleveland, O.
Airaterra (Roylyn Products), Glendale, Calif.
American Flow Control Corp., Houston, Tex.
Chicago Forging and Mfg. Co., Chicago, Ill.
Crawford Fitting Co., Cleveland, O.
Flodar Corp., Cleveland, O.
H-P Products, Inc., Louisville, O.
Imperial Brass Mfg. Co., Chicago, Ill.
Lenz Co., Dayton, O.
Parker-Hannifin Corp., Tube & Hose Fittings Div., Cleveland, O.
Special Screw Products, Bedford, O.
Swepco Tube Corp., Clifton, N. J.
Weatherhead Co., The, Ft. Wayne Div., Ft. Wayne, Ind.
Youngstown Welding & Engineering Co., Youngstown, O.

FLAME CONTROLS

See Controls, Flame Failure

FLAME CUTTERS

See Cutters, Flame

FLANGE BOLTS

See Bolts and Studs, Flange

FLANGE COVERS

See Covers, Protective, Valve and Flange

FLANGE LINE-UP

See Pins, for Flange Line-Up

FLANGE SEPARATORS

See Separators, Flange

FLANGES, ORIFICE

American Meter Co., Inc., Philadelphia, Pa.
Barton Instrument Corp., Monterey Park, Calif.
Bristol Co., The, Waterbury, Conn.
Builders-Providence Div., B-I-F Industries, Inc., Providence, R. I.
Fischer & Porter Co., Hatboro, Pa.
Foxboro Co., Foxboro, Mass.
Grinnell Co., Inc., Providence, R. I.
Industrial Plastic Fabricators, Norwood, Mass. (PVC)
Ladish Co., Cudahy, Wis.
Madden Corp., The, Chicago, Ill.
Meriam Instrument Co., The, Cleveland, O.
Minneapolis-Honeywell Regulator Co., Industrial Div., Philadelphia, Pa.

New York Brass Foundry, New York, N. Y. (brass)
Nuclear & Power Equipment Corp., S. San Francisco, Calif.
Penn Instruments Div. of Burgess-Manning Co., Philadelphia, Pa.
Pennsylvania Forge Co., Philadelphia, Pa.
Phoenix Mfg. Co., Catasauqua, Pa.
Taylor Forge & Pipe Wks., Chicago, Ill.
Trimount Instrument Co., Chicago, Ill.
Tube Turns Div. of Chemetron Corp., Louisville, Ky.
Walworth Co., New York, N. Y.

FLANGES, PIPE, ALLOY STEEL, LAP JOINT

Alco Products, Inc., Schenectady, N. Y.
Babcock & Wilcox Co., Tubular Products Div., Beaver Falls, Pa.
Camco Fittings, Inc., North Haven, Conn.
Cooper Alloy Corp., Hillside, N. J.
Crane Co., Chicago, Ill.
Electric Steel Foundry Co., Portland, Ore.
Flowline Corp., New Castle, Pa.
Grinnell Co., Inc., Providence, R. I.
Harrisburg Steel Co., Div. of Harsco Corp., Harrisburg, Pa.
Ladish Co., Cudahy, Wis.
Marquette Coppersmithing Co., Philadelphia, Pa.
Midwest Piping Co., Inc., St. Louis, Mo.
National Valve & Mfg. Co., Pittsburgh, Pa.
Nuclear & Power Equipment Corp., S. San Francisco, Calif.
Pennsylvania Forge Co., Philadelphia, Pa.
Phoenix Mfg. Co., Joliet, Ill.
Phoenix Mfg. Co., Catasauqua, Pa.
Pittsburgh Piping & Equipment Co., Pittsburgh, Pa.
Swepco Tube Corp., Clifton, N. J.
Taylor Forge & Pipe Works, Chicago, Ill.
Tube Forgings of America, Inc., Portland, Ore.
Tube Turns Div. of Chemetron Corp., Louisville, Ky.
Walworth Co., New York, N. Y.

FLANGES, PIPE, ALLOY STEEL, SCREWED

Alco Products, Inc., Schenectady, N. Y.
Babcock & Wilcox Co., Tubular Products Div., Beaver Falls, Pa.
Beaird Co., J. B., Shreveport, La.
Camco Fittings, Inc., North Haven, Conn.
Cooper Alloy Corp., Hillside, N. J.
Crane Co., Chicago, Ill.
Electric Steel Foundry Co., Portland, Ore.
Flowline Corp., New Castle, Pa.
Grinnell Co., Inc., Providence, R. I.
Harrisburg Steel Co., Div. of Harsco Corp., Harrisburg, Pa.
Ladish Co., Cudahy, Wis.
Midwest Piping Co., Inc., St. Louis, Mo.
National Valve & Mfg. Co., Pittsburgh, Pa.
Nuclear & Power Equipment Corp., S. San Francisco, Calif.
Pennsylvania Forge Co., Philadelphia, Pa.
Phoenix Mfg. Co., Joliet, Ill.
Phoenix Mfg. Co., Catasauqua, Pa.
Pittsburgh Piping & Equipment Co., Pittsburgh, Pa.
Star Stainless Screw Co., Paterson, N. J.
Taylor Forge & Pipe Works, Chicago, Ill.
Tube Forgings of America, Inc., Portland, Ore.
Tube Turns Div. of Chemetron Corp., Louisville, Ky.
Walworth Co., New York, N. Y.

FLANGES, PIPE, ALLOY STEEL, WELDING

Alco Products, Inc., Schenectady, N. Y.
Babcock & Wilcox Co., Tubular Products Div., Beaver Falls, Pa.
Camco Fittings, Inc., North Haven, Conn.
Cooper Alloy Corp., Hillside, N. J.
Crane Co., Chicago, Ill.
Electric Steel Foundry Co., Portland, Ore.
Flowline Corp., New Castle, Pa.
Grinnell Co., Inc., Providence, R. I.
Harrisburg Steel Co., Div. of Harsco Corp., Harrisburg, Pa.
Ladish Co., Cudahy, Wis.
Marquette Coppersmithing Co., Philadelphia, Pa.
Midwest Piping Co., Inc., St. Louis, Mo.
National Valve & Mfg. Co., Pittsburgh, Pa.
Nuclear & Power Equipment Corp., S. San Francisco, Calif.
Pennsylvania Forge Co., Philadelphia, Pa.
Pennsylvania Furnace & Iron Co., Warren, Pa.
Phoenix Mfg. Co., Joliet, Ill.
Phoenix Mfg. Co., Catasauqua, Pa.
Pittsburgh Piping & Equipment Co., Pittsburgh, Pa.
Semet-Solvay Engineering Div., Allied Chemical Corp., New York, N. Y.
Star Stainless Screw Co., Paterson, N. J.
Taylor Forge & Pipe Works, Chicago, Ill.
Tube Forgings of America, Inc., Portland, Ore.
Tube Turns Div. of Chemetron Corp., Louisville, Ky.
Walworth Co., New York, N. Y.

FLANGES, PIPE, ALUMINUM, WELDING

Flowline Corp., New Castle, Pa.
Grinnell Co., Inc., Providence, R. I.
Ladish Co., Cudahy, Wis.
National Valve & Mfg. Co., Pittsburgh, Pa.
Pennsylvania Forge Co., Philadelphia, Pa.
Pennsylvania Furnace & Iron Co., Warren, Pa.
Taylor Forge & Pipe Wks., Chicago, Ill.
Tube Turns Div. of Chemetron Corp., Louisville, Ky.

FLANGES, PIPE, BRASS, SCREWED

Acheson Mfg. Co., Rankin, Pa.
Chase Brass & Copper Co., Waterbury, Conn.
Conoflow Corp., Subsidiary of Walworth Co., Philadelphia, Pa.
Crane Co., Chicago, Ill.
Flagg & Co., Inc., Stanley G., Providence, R. I.
Ladish Co., Cudahy, Wis.
National Valve & Mfg. Co., Pittsburgh, Pa.
New York Brass Foundry, New York, N. Y.
Nibco, Inc., Elkhart, Ind.
Phoenix Brass Fittings Corp., Irvington, N. J.
Pittsburgh Brass Mfg. Co., Pittsburgh, Pa.
Quaker City Iron Wks., Philadelphia, Pa.
Ritter Pattern & Casting Co., New York, N. Y.
Span Brass Mfg. Co., Otsego, Mich.
Taylor Forge & Pipe Works, Chicago, Ill.
Union Metal Works Co., Inc., Chelsea, Mass.
Walworth Co., New York, N. Y.

FLANGES, PIPE, CAST IRON, SCREWED

Clow & Sons, Inc., James B., Chicago, Ill.
Crane Co., Chicago, Ill.
Fanner Mfg. Co., The, Cleveland, O.
Flagg & Co., Inc., Stanley G., Philadelphia, Pa.
Frick Co., Waynesboro, Pa.
G. & H Mfg. Co., Philadelphia, Pa.
Grinnell Co., Inc., Providence, R. I.
Henry Valve Co., Melrose Park, Ill.
Illinois Malleable Iron Co., Chicago, Ill.
Jordan Corp., Div. of OPW Corp., Cincinnati, O.
Kuhns Bros. Co., Dayton, O.
Lynchburg Foundry Co., Lynchburg, Va.
M & H Valve & Fittings Co., Div. of Walworth Co., Anniston, Ala.
National Valve & Mfg. Co., Pittsburgh, Pa.
Pittsburgh Piping & Equipment Co., Pittsburgh, Pa.
Ravena Iron Co., Ravena, N. Y.
Ritter Pattern & Casting Co., New York, N. Y.
Shahmoon Industries, Inc., Warren Foundry & Pipe Div., New York, N. Y.
Stockham Valves & Fittings, Birmingham, Ala.
Union Malleable Mfg. Co., Ashland, O.
Vilter Mfg. Co., The, Milwaukee, Wis.
Walworth Co., New York, N. Y.
Ward Foundries, Inc., J. P., Blossburgh, Pa.
York Corp., Subsidiary of Borg-Warner Corp., York, Pa.

FLANGES, PIPE, MALLEABLE IRON, SCREWED

Crane Co., Chicago, Ill.
Fanner Mfg. Co., The, Cleveland, O.
Flagg & Co., Inc., Stanley G., Philadelphia, Pa.
Grinnell Co., Inc., Providence, R. I.
Henry Valve Co., Melrose Park, Ill.
Jefferson Union Co., Lexington, Mass.
National Valve & Mfg. Co., Pittsburgh, Pa.
Union Malleable Mfg. Co., Ashland, O.
Walworth Co., New York, N. Y.
York Corp., Subsidiary of Borg-Warner Corp., York, Pa.

FLANGES, PIPE, NICKEL AND NICKEL ALLOY

Bart Mfg. Corp., Belleville, N. J.
Camco Fittings, Inc., North Haven, Conn.
Cooper Alloy Corp., Hillside, N. J.
Crane Co., Chicago, Ill.
Electric Steel Foundry Co., Portland, Ore.
Flowline Corp., New Castle, Pa.
Haynes Stellite Co., Div. of Union Carbide Corp., New York, N. Y.
International Nickel Co., Inc., The, New York, N. Y.
Ladish Co., Cudahy, Wis.
Marquette Coppersmithing Co., Philadelphia, Pa.
Nuclear & Power Equipment Corp., S. San Francisco, Calif.
Pennsylvania Forge Co., Philadelphia, Pa.
Speedline Stainless Steel Fittings Div., Horace T. Potts Co., Philadelphia, Pa.
Star Stainless Screw Co., Paterson, N. J.
Swepco Tube Corp., Clifton, N. J.
Taylor Forge & Pipe Wks., Chicago, Ill.
Tube Turns Div. of Chemetron Corp., Louisville, Ky.
Walworth Co., New York, N. Y.

FLANGES, PIPE, PLASTIC

Argo Plastic Products, Cleveland, O.
Colonial Plastics Mfg. Co., Industrial Div., Cleveland, O.
Dow Chemical Co., The, Midland, Mich. (saran-lined)
Fibercast Co., Sand Spring, Okla.
Grinnell Co., Inc., Providence, R. I.
Haveg Industries, Inc., Wilmington, Del.
Luzerne Rubber Co., Trenton, N. J.
Mannesmann-Easton Plastic Products Co., Inc., Easton, Pa. (rigid unplasticized polyvinyl chloride)
Skyline Industries Sales, Inc., Titusville, Pa.
Sloane Mfg. Co., Sun Valley, Calif.
Triangle Conduit & Cable Co., Inc., New Brunswick, N. J.
Tube Turns Plastics, Inc., Louisville, Ky.
Vanton Pump & Equipment Corp., Hillside, N. J.

FLANGES, PIPE, STEEL, FORGED

Alco Products, Inc., Schenectady, N. Y.
Babcock & Wilcox Co., Tubular Products Div., Beaver Falls, Pa.
Camco Fittings, Inc., North Haven, Conn.
Crane Co., Chicago, Ill.
Dersch, Gesswein & Neuert, Inc., Chicago Ill.
Grinnell Co., Inc., Providence, R. I.
Harrisburg Steel Co., Div. of Harsco Corp., Harrisburg, Pa.
Harrison Steel Corp., Brooklyn, N. Y.
Henry Valve Co., Melrose Park, Ill.
Ladish Co., Cudahy, Wis.
Midwest Piping Co., Inc., St. Louis, Mo.
National Valve & Mfg. Co., Pittsburgh, Pa.
O. T. M. Corp., Houston, Tex.
Phoenix Mfg. Co., Catasauqua, Pa.
Phoenix Mfg. Co., Joliet, Ill.
Plastipipe, Products of Plastic Process Co., Div. of Monadnock Mills, Los Angeles, Calif.
Pennsylvania Forge Co., Philadelphia, Pa.
Taylor Forge & Pipe Wks., Chicago, Ill.
Tube Forgings of America, Inc., Portland, Ore.
Tube Turns Div. of Chemetron Corp., Louisville, Ky.
Walworth Co., New York, N. Y.

FLANGES, PIPE, STEEL, LAP JOINT

Alco Products, Inc., Schenectady, N. Y.
Babcock & Wilcox Co., Tubular Products Div., Beaver Falls, Pa.
Camco Fittings, Inc., North Haven, Conn.
Crane Co., Chicago, Ill.
Flowline Corp., New Castle, Pa.
Grinnell Co., Inc., Providence, R. I.
Harrisburg Steel Co., Div. of Harsco Corp., Harrisburg, Pa.

Ladish Co., Cudahy, Wis.
Marquette Coppersmithing Co., Philadelphia, Pa.
Midwest Piping Co., Inc., St. Louis, Mo.
National Valve & Mfg. Co., Pittsburgh, Pa.
Pennsylvania Forge Co., Philadelphia, Pa.
Phoenix Mfg. Co., Joliet, Ill.
Phoenix Mfg. Co., Catasauqua, Pa.
Pittsburgh Piping & Equipment Co., Pittsburgh, Pa.
Swepco Tube Corp., Clifton, N. J.
Taylor Forge & Pipe Works, Chicago, Ill.
Tube Forgings of America, Inc., Portland, Ore.
Tube Turns Div. of Chemetron Corp., Louisville, Ky.
Vogt Machine Co., Henry, Louisville, Ky.
Walworth Co., New York, N. Y.

FLANGES, PIPE, STEEL, SCREWED

Babcock & Wilcox Co., The, Tubular Products Div., Beaver Falls, Pa.
Beaird Co., J. B., Shreveport, La.
Camco Fittings, Inc., North Haven, Conn.
Crane Co., Chicago, Ill.
Electric Steel Foundry Co., Portland, Ore.
Frick Co., Waynesboro, Pa.
Grinnell Co., Inc., Providence, R. I.
Harrisburg Steel Co., Div. of Harsco Corp., Harrisburg, Pa.
Henry Valve Co., Melrose Park, Ill.
Hubbell Corp., Mundelein, Ill.
Ladish Co., Cudahy, Wis.
Midwest Piping Co., Inc., St. Louis, Mo.
National Valve & Mfg. Co., Pittsburgh, Pa.
Pennsylvania Forge Co., Philadelphia, Pa.
Phoenix Mfg. Co., Joliet, Ill.
Phoenix Mfg. Co., Catasauqua, Pa.
Pittsburgh Piping & Equipment Co., Pittsburgh, Pa.
Taylor Forge & Pipe Works, Chicago, Ill.
Tube Forgings of America, Inc., Portland, Ore.
Tube Turns Div. of Chemetron Corp., Louisville, Ky.
U. S. Plug & Fitting Co., Wellington, O.
Vilter Mfg. Co., Milwaukee, Wis.
Vogt Machine Co., Henry, Louisville, Ky.
Walworth Co., New York, N. Y.

FLANGES, PIPE, STEEL, WELDING

Alco Products, Inc., Schenectady, N. Y.
Allegheny Valve Co., Warren, Pa.
Armco Drainage & Metal Products, Inc., Welded Pipe Sales Div., Middletown, O.
Babcock & Wilcox Co., Tubular Products Div., Beaver Falls, Pa.
Camco Fittings, Inc., North Haven, Conn.
Crane Co., Chicago, Ill.
Electric Steel Foundry Co., Portland, Ore.
Grinnell Co., Inc., Providence, R. I.
Harrisburg Steel Co., Div. of Harsco Corp., Harrisburg, Pa.
Henry Valve Co., Melrose Park, Ill.
Hubbell Corp., Mundelein, Ill.
Ladish Co., Cudahy, Wis.
Midwest Piping Co., Inc., St. Louis, Mo.
National Valve & Mfg. Co., Pittsburgh, Pa.
Naylor Pipe Co., Chicago, Ill.
Pennsylvania Forge Co., Philadelphia, Pa.
Pennsylvania Furnace & Iron Co., Warren, Pa.
Phoenix Mfg. Co., Joliet, Ill.
Phoenix Mfg. Co., Catasauqua, Pa.
Pipe Line Development Co., Cleveland, O.
Pittsburgh Piping & Equipment Co., Pittsburgh, Pa.
Roessing Mfg. Co., Pittsburgh, Pa.
Ryerson & Son, Inc., Joseph T., Chicago, Ill.
Semet-Solvay Engineering Div., Allied Chemical Corp., New York, N. Y.
Taylor Forge & Pipe Works, Chicago, Ill.
Tube Forgings of America, Inc., Portland, Ore.
Tube Turns Div. of Chemetron Corp., Louisville, Ky.
Vilter Mfg. Co., Milwaukee, Wis.
Vogt Machine Co., Henry, Louisville, Ky.
Walworth Co., New York, N. Y.

FLARED FITTINGS, COPPER TUBE

See Fittings, Copper, Tube, Flared

FLARED FITTINGS, STEEL TUBE

See Fittings, Steel Tube, Flared

FLARING TOOLS FOR TUBING

See Tools, Flaring

FLEXIBLE COUPLINGS

See Couplings, Flexible

FLEXIBLE DUCT CONNECTIONS

See Connections, Duct, Flexible

FLEXIBLE DUCTS

See Ducts and Duct Fittings, Prefabricated, Flexible, Metallic and Non-Metallic

FLEXIBLE METAL HOSE

See Hose, Flexible, Metal and Fittings

FLOAT SWITCHES

See Switches, Float

FLOAT VALVES

See Valves, Float

FLOATS, STEAM TRAP, ETC.

Armstrong Machine Wks., Three Rivers, Mich.
Bailey Co., Chas. M., San Francisco, Calif.
Chicago Float Works, Not Inc., Chicago, Ill.
Clifford Mfg. Co., Div. of Standard-Thomson Corp., Waltham, Mass.
Defender Instrument & Regulator Co., Boody, Ill.
Harris & Co., Arthur, Chicago, Ill. (all metals)
Hoffman Specialty Mfg. Corp., Indianapolis, Ind.
McAlear Mfg. Co., Chicago, Ill.
Nicholson & Co., W. H., Wilkes-Barre, Pa.
Owens & Co., Inc., Henry, Cranston, R. I.
Reichert Float & Mfg. Co., Toledo, O.
Sarco Co., Inc., New York, N. Y.
Sterling Engineering Mfg. Corp., Hyde Park, Mass.
Trane Co., The, La Crosse, Wis.
Trerice Co., H. O., Detroit, Mich.
Watson & McDaniel Co., Philadelphia, Pa.
Williams Gauge Co., Inc., The, Pittsburgh, Pa.

FLOOR AND CEILING PLATES

See Plates, Floor and Ceiling

FLOW ALARMS

See Alarms, High and Low Flow for Piping Systems

FLOW CONTROL VALVES

See Valves, Flow Control

FLOW MEASURING NOZZLES AND TUBES

See Nozzles, Flow Measuring

FLOW METERS

See Meters, Flow

FLOW SWITCHES

See Switches, Flow

FLOW TRANSMITTERS

See Transmitters, Flow

FORGED STEEL VALVES

See Valves, Forged Steel

FRAMES, AIR INLET, PREFABRICATED, FOR AIR CONDITIONING UNITS

Courier Associates, Inc., New York, N. Y.
Lewis Mfg. Co., Inc., Miami, Fla.

FRAMES FOR HOLDING PANEL TYPE AIR FILTERS

Air-Maze Corp., Cleveland, O.
Courier Associates, Inc., New York, N. Y.
Evans Corp., The George, Moline, Ill.
Temtrol, Inc., Okarche, Okla.

FRESHENERS, AIR

See Adsorbers, Odor, for Duct Systems; Compounds, Air Freshening

FUEL ECONOMIZERS

See Economizers, Fuel

FUEL OIL LEAK DETECTORS

See Detectors, Leak, Fuel Oil

FUEL OIL METERING VALVES

See Valves, Fuel Oil, Metering

FUEL OIL UNITS

See Units, Fuel Oil, Heating, Pumping and Straining

FURNACES, DUCT

See Heaters, Duct

FURNACES, SUSPENDED

See Heaters, Air, Direct Fired

FURNACES, WARM AIR, FOR INDUSTRIAL AND LARGE BUILDING CENTRAL HEATING

Exclusively for duct distribution of air—300,000 Btu per hr and over. For direct fired heaters, which may be located in the space heated or may be used in central plant installations with duct distribution of the air, see the listings under Heaters, Air, Direct Fired.

Air Conditioning Engineering Co., Cambridge, Mass.
Air Heaters, Inc., Youngstown, O.
Aladdin Heating Corp., San Leandro, Calif.
American Foundry & Furnace Co., Bloomington, Ill.
Anchor Div., Stratton & Terstegge Co., Inc., New Albany, Ind.
Arkos Mfg. Co., Detroit, Mich.
Armstrong Furnace Co., Div. of National Union Electric Corp., Columbus, O.
Auburn Foundry, Inc., Heating Div., Auburn, Ind.
Bard Mfg. Co., Bryan, O.
Besser Furnace and Air Conditioning Corp., Charlotte, N. C.
Bryant Mfg. Co., Indianapolis, Ind.
Campbell Co., E. K., Kansas City, Mo.
Campbell Heating Co., Des Moines, Ia.
Century Engineering Corp., Cedar Rapids, Ia.
Chicago Steel Furnace Co., Chicago, Ill.
Cox Mfg. Co., Ridgeville, Ind.
Dravo Corp., Machinery Div., Pittsburgh, Pa.
Hayes Furnace Mfg. & Supply Co., Los Angeles, Calif.
Inland Heater Corp., Minneapolis, Minn.
International Heater Co., Utica, N. Y.
Jackson & Church Co., Saginaw, Mich.
Janitrol Heating & Air Conditioning Div., Surface Combustion Corp., Columbus, O.
Johnson Heater Corp., Chelsea, Mass.
Lee Corporation, Wilmington, Del.
Lennox Industries Inc., Des Moines, Ia.
Lennox Industries Inc., Columbus, O.
Lennox Industries Inc., Marshalltown, Ia.
MaGirl Foundry & Furnace Co., Bloomington, Ill.
Mammoth Furnace Co., Minneapolis, Minn.
McPherson Furnace & Supply Co., Portland, Ore.
Meyer Furnace Co., The, Peoria, Ill.
Montag Inc., Portland, Ore.
Mueller Climatrol, Div. of Worthington Corp., Milwaukee, Wis.
National Heater Co., Inc., St. Paul Minn.
National-U. S. Radiator Corp., Johnstown, Pa.
Norwalk Air Conditioning Corp., S. Norwalk, Conn.
Patten Co., J. V., Sycamore, Ill.
Pennsylvania Furnace & Iron Co., Warren, Pa.
Quiet Automatic Oil Burner Corp., Newark, N. J.
Ray Oil Burner Co., San Francisco, Calif.
Reznor Mfg. Co., Mercer, Pa.
Rosebraugh Co., W. W., Salem, Ore.
Round Oak Co., Inc., Dowagiac, Mich.
Surface Combustion Corp., Toledo, O.
Syncromatic Corp., Watertown, Wis.
Tjernlund Mfg. Co., St. Paul, Minn.
Tuck-Aire Furnace Co., San Francisco, Calif.
Waterman-Waterbury Co., The, Minneapolis, Minn.
York-Shipley, Inc., York, Pa.

FUSIBLE LINKS

See Links, Fusible

GAGE GLASSES

See Glasses, Gage

GAGE SETS, REFRIGERATION

Airserco Mfg. Co., Inc., Pittsburgh, Pa.
Defender Instrument & Regulator Co., Boody, Ill.

Henry Valve Co., Melrose Park, Ill.
Imperial Brass Mfg. Co., Chicago, Ill.
Kent-Moore Organization, Inc., Warren, Mich.
Shank Co., Cyrus, Chicago, Ill.
United States Gauge Div. of American Machine & Metals, Inc., Sellersville, Pa.

GAGE TESTERS

See Testers, Gage, Dead Weight

GAGES, AIR FILTER

Bacharach Industrial Instrument Co., Pittsburgh, Pa. (filter gauge)
Cleveland Controls, Inc., Cleveland, O.
Defender Instrument and Regulator Co., Boody, Ill.
Dietz Co., Henry G., Long Island City, N.Y.
Dwyer Mfg. Co., F. W., Michigan City, Ind.
Ellison Draft Gage Co., Chicago, Ill.
Fischer & Porter Co., Hatboro, Pa.
Hays Corp., Michigan City, Ind.
Herbusch Corp., The, St. Louis, Mo. (Warning device)
Meriam Instrument Co., The, Cleveland, O.
Trerice Co., H. O., Detroit, Mich.
Trimount Instrument Co., Chicago, Ill.
Uehling Instrument Co., Paterson, N. J.

GAGES, INDICATING, DRAFT

Bacharach Industrial Instrument Co., Pittsburgh, Pa.
Bailey Meter Co., Cleveland, O.
Bristol Co., The, Waterbury, Conn.
Canton Stoker Corp., Canton, O.
Cleveland Controls, Inc., Cleveland, O.
Cole-Sewell Engineering Co., St. Paul, Minn.
Defender Instrument and Regulator Co., Boody, Ill.
Dwyer Mfg. Co., F. W., Michigan City, Ind
Ellison Draft Gage Co., Chicago, Ill.
Fischer & Porter Co., Hatboro, Pa.
General Controls Co., Glendale, Calif.
Hays Corp., Michigan City, Ind.
Hill & Co., E. Vernon, Lake Geneva, Wis.
King Engineering Corp., Ann Arbor, Mich.
Manning, Maxwell & Moore, Inc., Stratford, Conn.
Meriam Instrument Co., The, Cleveland, O
Minneapolis-Honeywell Regulator Co., Industrial Div., Philadelphia, Pa.
Moeller Instrument Co., Richmond Hill, N. Y.
Moore Products Co., Philadelphia, Pa.
Precision Thermometer & Instrument Co., Philadelphia, Pa.
Republic Flow Meters Co., Chicago, Ill.
Scientific Instrument Co., Detroit, Mich.
Shallcross Controls, Inc., Markesan, Wis.
Trimount Instrument Co., Chicago, Ill.
Uehling Instrument Co., Paterson, N. J.

GAGES, INDICATING, PRESSURE

Acme Gauge & Instrument Co., Inc., Brooklyn, N. Y.
Bacharach Industrial Instrument Co., Pittsburgh, Pa.
Bailey Meter Co., Cleveland, O.
Binks Mfg. Co., Chicago, Ill.
Bristol Co., The, Waterbury, Conn.
Canton Stoker Corp., Canton, O.
Cleveland Controls, Inc., Cleveland, O.
Crosby Valve & Gage Co., Wrentham, Mass.
Defender Instrument and Regulator Co., Boody, Ill.
Dickson Co., The, Chicago, Ill.
Dillon & Co., Inc., W. C., Van Nuys, Calif. (mechanical)
Dunham-Bush, Inc., West Hartford, Conn.
Dwyer Mfg. Co., F. W., Michigan City, Ind.
Ellison Draft Gage Co., Chicago, Ill.
Fischer & Porter Co., Hatboro, Pa.
Foxboro Co., Foxboro, Mass.
Gardner-Denver Co., Quincy, Ill.
General Blower Co., Philadelphia, Pa.
General Controls Co., Glendale, Calif.
Hastings-Raydist, Inc., Hampton, Va.
Hays Corp., Michigan City, Ind.
Helicoid Gage Div., American Chain & Cable Co., Inc., Bridgeport, Conn.
Hill & Co., E. Vernon, Lake Geneva, Wis.
Imperial Brass Mfg. Co., Chicago, Ill.
International Register Co., Chicago, Ill.
Kunkle Valve Co., Ft. Wayne, Ind.
Longergan Co., J. E., Philadelphia, Pa.
Manning, Maxwell & Moore, Inc., Stratford, Conn.
Marsh Heating Equipment Co., Skokie, Ill.
Marsh Instrument Co., Skokie, Ill.
Marshalltown Mfg. Co., Marshalltown, Ia.
Meriam Instrument Co., The, Cleveland, O.
Minneapolis-Honeywell Regulator Co., Industrial Div., Philadelphia, Pa.
Modern Engineering Co., St. Louis, Mo.
Moore Products Co., Philadelphia, Pa.
New York Air Valve Corp., Brooklyn, N. Y
Norden-Ketay Corp., Instrument & Systems Div., Milford, Conn.
Norwalk Valve Div., Eclipse Fuel Engineering Co., Rockford, Ill.
Norwood Controls, A Unit of Detroit Controls, Norwood, Mass.
Penn Instruments Div. of Burgess-Manning Co., Philadelphia, Pa.
Pure Carbonic Co., Div. of Air Reduction Co., Inc., New York, N. Y. (carbon dioxide)
Republic Flow Meters Co., Chicago, Ill.
Research Vacuum Supply Co., Chicago, Ill.
Rochester Mfg. Co., Inc., Rochester, N. Y.
Scientific Instrument Co., Detroit, Mich.
Shallcross Controls, Inc., Markesan, Wis.
Stewart-Warner Corp., South Wind Div., Indianapolis, Ind.
Taylor Instrument Companies, Rochester, N. Y.
Trerice Co., H. O., Detroit, Mich.
Triplex Heating Specialty Co., Inc., Peru, Ind.
Uehling Instrument Co., Paterson, N. J.
United Instrument Co., Brooklyn, N. Y.
United States Gauge Div. of American Machine and Metals, Inc., Sellersville, Pa.
Wallace & Tiernan Inc., Belleville, N. J.
Weksler Instruments Corp., Freeport, L. I., N. Y.

GAGES, INDICATING, VACUUM

Airserco Mfg. Co., Inc., Pittsburgh, Pa.
Bailey Meter Co., Cleveland, O.
Bristol Co., The, Waterbury, Conn.
Cleveland Controls, Inc., Cleveland, O.
Crosby Valve & Gage Co., Wrentham, Mass.
Defender Instrument and Regulator Co., Boody, Ill.
Dickson Co., The, Chicago, Ill.
Dole Valve Co., The, Morton Grove, Ill.
Dunham-Bush, Inc., West Hartford, Conn.
Dwyer Mfg. Co., F. W., Michigan City, Ind
Ellison Draft Gage Co., Chicago, Ill.
Fischer & Porter Co., Hatboro, Pa.
Foxboro Co., Foxboro, Mass.
General Electric Co., Apparatus Sales Div., Schenectady, N. Y.
Hastings-Raydist, Inc., Hampton, Va.
Helicoid Gage Div., American Chain & Cable Co., Inc., Bridgeport, Conn.
Hill & Co., E. Vernon, Lake Geneva, Wis.
Imperial Brass Mfg. Co., Chicago, Ill.
International Register Co., Chicago, Ill.
Kunkle Valve Co., Ft. Wayne, Ind.
Longergan Co., J. E., Philadelphia, Pa.
Manning, Maxwell & Moore, Inc., Stratford, Conn.
Marsh Instrument Co., Skokie, Ill.
Marshalltown Mfg. Co., Marshalltown, Ia.
Meriam Instrument Co., The, Cleveland, O
Minneapolis-Honeywell Regulator Co., Industrial Div., Philadelphia, Pa.
Moeller Instrument Co., Richmond Hill, N. Y.
New York Air Valve Corp., Brooklyn, N. Y.
Norden-Ketay Corp., Instrument and Systems Div., Milford, Conn.
Norwalk Valve Div., Eclipse Fuel Engineering Co., Rockford, Ill.
Precision Thermometer & Instrument Co., Philadelphia, Pa.
Republic Flow Meters Co., Chicago, Ill.
Research Vacuum Supply Co., Chicago, Ill.
Rochester Mfg. Co., Inc., Rochester, N. Y.
Scientific Instrument Co., Detroit, Mich.
Stewart-Warner Corp., South Wind Div., Indianapolis, Ind.
Taylor Instrument Companies, Rochester, N. Y.
Trerice Co., H. O., Detroit, Mich.
Trimount Instrument Co., Chicago, Ill.
Uehling Instrument Co., Paterson, N. J.
United States Gauge Div. of American Machine and Metals, Inc., Sellersville, Pa.
Wallace & Tiernan Inc., Belleville, N. J.
Weksler Instruments Corp., Freeport, L. I., N. Y.

GAGES, LIQUID LEVEL

Alloy Steel Products Co., Linden, N. J. (Stainless steel)
Automatic Control Co., St. Paul, Minn.
Bailey Meter Co., Cleveland, O.
Barclay, Inc., Robert, Chicago, Ill.
Bristol Co., The, Waterbury, Conn.
Builders-Providence Div., B-I-F Industries, Inc., Providence, R. I.
Cooper Alloy Corp., Hillside, N. J.
Crane Co., Chicago, Ill.
Crosby Valve & Gage Co., Wrentham, Mass.
Defender Instrument and Regulator Co., Boody, Ill.
Diamond Power Specialty Corp., Lancaster, O.
Ernst Water Column & Gauge Co., Livingston, N. J.
Fine Products Co., Berwyn, Ill.
Fischer & Porter Co., Hatboro, Pa.
Foxboro Co., Foxboro, Mass.
Frick Co., Waynesboro, Pa.
General Controls Co., Glendale, Calif.
Hays Corp., Michigan City, Ind.
Henry Valve Co., Melrose Park, Ill.
Infilco, Inc., Tucson, Ariz.
Instrument Div., Robertshaw-Fulton Controls Co., Philadelphia, Pa.
Keckley Co., O. C., Skokie, Ill.
King Engineering Corp., Ann Arbor, Mich.
Krueger Sentry Gauge Co., Green Bay, Wis.
Liquidometer Corp., Long Island City, N. Y.
Longergan Co., J. E., Philadelphia, Pa.
Lunkenheimer Co., Cincinnati, O.
Mar-Coil Heater Co., Union, N. J.
Meriam Instrument Co., The, Cleveland, O.
Minneapolis-Honeywell Regulator Co., Industrial Div., Philadelphia, Pa.
Moore Products Co., Philadelphia, Pa.
New York Air Valve Corp., Brooklyn, N. Y.
Norden-Ketay Corp., Instrument and Systems Div., Milford, Conn.
Norwood Controls, A Unit of Detroit Controls, Norwood, Mass.
Oil Equipment Mfg. Corp., New Haven, Conn.
Penberthy Mfg. Co., Div. of Buffalo Eclipse Corp., Detroit, Mich.
Penn Instruments Div. of Burgess-Manning Co., Philadelphia, Pa.
Petrometer Corp., Long Island City, N. Y.
Philadelphia Pump Div., American Meter Co., Philadelphia, Pa.
Phillips & Co., H. A., Chicago, Ill.
Powell Co., Wm., Cincinnati, O.
Reliance Gauge Column Co., Cleveland, O.
Republic Flow Meters Co., Chicago, Ill.
Republic Mfg. Co., Cleveland, O.
Rochester Mfg. Co., Inc., Rochester, N. Y.
Scientific Instrument Co., Detroit, Mich.
Shank Co., Cyrus, Chicago, Ill.
Simplex Valve & Meter Co., Lancaster, Pa.
Stewart-Warner Corp., South Wind Div., Indianapolis, Ind.
Strahman Valves, Inc., New York, N. Y.
Superior Valve & Fittings Co., Pittsburgh, Pa.
Swift Lubricator Co., Elmira, N. Y.
Taylor Instrument Companies, Rochester, N. Y.
Texas Instruments, Inc., Houston, Tex.
Trerice Co., H. O., Detroit, Mich.
Trimount Instrument Co., Chicago, Ill.
Uehling Instrument Co., Paterson, N. J.
United States Gauge Div. of American Machine and Metals, Inc., Sellersville, Pa.
Wallace & Tiernan Inc., Belleville, N. J.
Williams Gauge Co., Inc., The, Pittsburgh, Pa. (water)
Yarnall-Waring Co., Philadelphia, Pa.
York Corp., Subsidiary of Borg-Warner Corp., York, Pa.

GAGES, OIL BURNER ELECTRODES

Scully Signal Co., Melrose, Mass.

GAGES, OIL TANK

Applied Mechanics Co., Boston, Mass.
Barclay, Inc., Robert, Chicago, Ill.
Boston Machine Works Co., Lynn, Mass.
Defender Instrument & Regulator Co., Boody, Ill.
Fischer & Porter Co., Hatboro, Pa.
Foxboro Co., Foxboro, Mass.
King Engineering Corp., Ann Arbor, Mich.
Krueger Sentry Gauge Co., Green Bay, Wis.
Liquidometer Corp., Long Island City, N. Y.
Lunkenheimer Co., Cincinnati, O.
Manning, Maxwell & Moore, Inc., Stratford, Conn.
Mar-Coil Heater Co., Union, N. J.
Meriam Instrument Co., The, Cleveland, O.
Oil Equipment Mfg. Corp., New Haven, Conn.

Penberthy Mfg. Co., Div. of Buffalo Eclipse Corp., Detroit, Mich.
Petrometer Corp., Long Island City, N. Y.
Rochester Mfg. Co., Inc., Rochester, N. Y.
Scully Signal Co., Melrose, Mass.
Trimount Instrument Co., Chicago, Ill.
Uehling Instrument Co., Paterson, N. J.
Viking Pump Co., Cedar Falls, Ia.

GAGES, PIPE

A.C.M.I. Borescope Div., American Cystoscope Makers, Inc., Pelham Manor, N. Y. (internal borescope)
Dayton Rogers Mfg. Co., Minneapolis, Minn.
Defender Instrument & Regulator Co., Boody, Ill.
Greenfield Tap & Die Div. of United Greenfield Corp., Greenfield, Mass. (thread)
Threadwell Tap & Die Co., Greenfield, Mass.
Three Point Industries, Evanston, Ill.

GALVANIZED SHEETS

See Sheets, Steel, Galvanized

GALVANNEALED SHEETS

See Sheets, Steel, Galvannealed

GARAGE VENTILATION FITTINGS

See Fittings, Exhaust, Garage, for Attaching Car Exhaust Pipe

GAS BURNERS

See Burners, Gas

GAS ENGINES

See Engines, Gas

GAS FIRED RADIATORS

See Radiators, Gas Fired

GAS PRESSURE REGULATORS

See Regulators, Pressure, Gas

GAS VENT AND FLUE PIPE

See Pipe and Fittings, Gas Vent and Flue

GAS VOLUME METERS

See Meters, Volume, Air and Gas

GASKETS

Acme Asbestos Covering & Flooring Co., Chicago, Ill.
Akron Metallic Gasket Co., Akron, O.
Allpax Co., Inc., Mamaroneck, N. Y.
Alpha Metals, Inc., Jersey City, N. J.
American Felt Co., Glenville, Conn.
American Smelting & Refining Co., Federated Metals Div., New York, N. Y.
Anchor Packing Co., Philadelphia, Pa. (Asbestos)
Andrew Parts Mfg. Co., Long Island City, N. Y.
Armstrong Cork Co., Lancaster, Pa. (Cork & cork composition)
Belmont Packing & Rubber Co., Philadelphia, Pa.
Belmont Smelting & Refining Works, Inc., Brooklyn, N. Y. (Lead)
Brady Co., W. H., Milwaukee, Wis.
Carey Mfg. Co., Philip, Lockland, Cincinnati, O.
Chase Brass & Copper Co., Waterbury, Conn (Brass and copper)
Chesterton Co., A. W., Everett, Mass.
Chicago Gasket Co., Chicago, Ill.
Chicago-Wilcox Mfg. Co., Chicago, Ill.
Clow & Sons, Inc., James B., Chicago, Ill.
Continental-Diamond Fibre Corp., Newark, Del.
Continental Rubber Wks., Erie, Pa.
Crane Co., Chicago, Ill.
Crane Packing Co., Morton Grove, Ill.
Darcoid Co., Inc., New York, N. Y. (Asbestos)
Durabla Mfg. Co., New York, N. Y. (Asbestos fibre)
Durable Rubber Products, Chicago, Ill. (rubber)
Ernst Water Column & Gauge Co., Livingston, N. J.
Excelsior Leather Washer Mfg. Co., Rockford, Ill. (leather)
Felt Products Mfg. Co., Skokie, Ill.
Felters Company, The, Boston, Mass. (felt)
Flexlock Corp., Kent, O.
Flexrock Co., Philadelphia, Pa.
Garlock Packing Co., Palmyra, N. Y.
Goodall Rubber Co., Trenton, N. J.
Goodrich Co., B. F., Shelton, Conn.
Goodrich Industrial Products Co., B. F., Akron, O. (rubber)
Goodyear Tire & Rubber Co., Akron, O.
Grant Wilson, Inc., Chicago, Ill. (asbestos)
Graton & Knight Co., Worcester, Mass. (Leather)
Greene, Tweed & Co., North Wales, Pa.
Hewitt-Robins, Inc., Stamford, Conn.
Houghton & Co., E. F., Philadelphia, Pa.
Johns-Manville, New York, N. Y.
Linear Incorporated, Philadelphia, Pa.
McCord Corp., Detroit, Mich.
Mercer Rubber Co., Hamilton Sq., N. J.
Metallo Gasket Co., New Brunswick, N. J. (Metal, metal asbestos)
Mic-Lin Co., Maple Shade, N. J.
Mortell Co., J. W., Kankakee, Ill.
National Lead Co., New York, N. Y. (lead)
Neff-Perkins Co., Painesville, O.
New York Belting & Packing Co., Passaic, N. J.
Nicolet Industries, Inc., Hamilton, O. (asbestos)
Pacific States Felt & Mfg. Co., Inc., San Francisco, Calif.
Parker Seal Co., Culver City, Calif.
Products Research Co., Los Angeles, Calif.
Raybestos-Manhattan, Inc., Passaic, N. J. (Rubber and asbestos)
Rhopac, Inc., Skokie, Ill. (all types — non metallic)
Rubatex Div., Great American Industries, Inc., Bedford, Va.
Rubber Products Div., Parker-Hannifin Corp., Cleveland, O.
Saran Lined Pipe Co., Ferndale, Mich.
Schieren Co., Chas. A., Camden, N. J.
Spring Packing Corp., Chicago, Ill. (adhesive-backed sponge rubber, cork & felt)
Stalwart Rubber Co., The, Bedford, O. (rubber)
Stokes Molded Products, Div. of The Electric Storage Battery Co., Trenton, N. J. (Hard rubber)
Strahman Valves, Inc., New York, N. Y.
Technical Ply-Woods Sales, Chicago, Ill.
Tube Turns Plastics, Inc., Louisville, Ky. (for PVC pipe)
United States Gasket Co., Camden, N. J.
United States Rubber Co., New York, N. Y.
United States Stoneware Co., New York, N. Y.
United States Stoneware Co., Plastics & Synthetics Div., Akron, O. (plastic)
Western Felt Wks., Chicago, Ill. (Felt)
Zimmerman Packing, Cincinnati, O. (also gasket cutters)

GASOLINE FIRED HEATERS

See Heaters, Gasoline Fired

GAS VENT AND FLUE PIPE AND FITTINGS

See Pipe and Fittings, Gas Vent and Flue

GATES, BLAST

Allington & Curtis Mfg. Co., Saginaw, Mich.
Berger Bros., Co., Philadelphia, Pa.
Buffalo Forge Co., Buffalo, N. Y.
Champion Blower & Forge Co., Lancaster, Pa.
Clarage Fan Co., Kalamazoo, Mich.
Day Co., The, Minneapolis, Minn.
Eclipse Fuel Engineering Co., Rockford, Ill.
Goethel Sheet Metal Works, Inc., Alfred, Milwaukee, Wis.
Industrial Plastic Fabricators, Norwood, Mass. (PVC and polyethylene)
Kirk & Blum Mfg. Co., Cincinnati, O.
Rockwell Co., W. S., Fairfield, Conn.
Schurs Oil Burner Co., Los Angeles, Calif.
Semet-Solvay Engineering Div., Allied Chemical Corp., New York, N. Y.
Spencer Turbine Co., Hartford, Conn.
Winkler & Sons, Inc., A. E., Milwaukee, Wis.

GATES, LIFT, FOR TRUCKS

Anthony Company, Streator, Ill.

GEAR-MOTORS

Abart Gear & Machine Co., Chicago, Ill.
Allis-Chalmers Mfg. Co., Milwaukee, Wis.
Allis Co., Louis, The, Milwaukee, Wis.
Boston Gear Works, Quincy, Mass.
Brooke Engineering Co., Inc., Philadelphia, Pa.
Century Electric Co., St. Louis, Mo.
Cone-Drive Gears Div., Michigan Tool Co., Detroit, Mich.
Doerr Electric Corp., Cedarburg, Wis.
Electro-Dynamic Div. of General Dynamics Corp., Bayonne, N. J.
Elliott Co., Jeannette, Pa.
Falk Corp., Milwaukee, Wis.
Hewitt-Robins, Inc., Stamford, Conn.
Howard Industries, Inc., Racine, Wis.
Howell Electric Motors Co., Howell, Mich.
Janette Elect. Mfg. Co., Morton Grove, Ill.
Kalamazoo Div., New York Air Brake Co., Kalamazoo, Mich. (hydraulic)
Lamb Electric Co., A Div. of American Machine & Metals, Inc., Kent, O.
Lima Electric Motor Co., Inc., The, Lima, O.
Link-Belt Co., Chicago, Ill.
Master Electric Co., Div. of Reliance Electric & Engineering Co., Dayton, O.
Philadelphia Gear Corp., Philadelphia, Pa.
Smith Corp., A. O., Milwaukee, Wis.
Sterling Electric Motors, Inc., Los Angeles, Calif.
U.S. Electrical Motors, Inc., Los Angeles, Calif.
Wagner Electric Corp., St. Louis, Mo.
Westinghouse Electric Corp., Pittsburgh, Pa.

GENERATORS, ELECTRIC PORTABLE, ENGINE DRIVEN

(specifically designed for supplying power to power tools)

Electric Machinery Mfg. Co., Minneapolis, Minn.
Howard Industries, Inc., Racine, Wis.
Kato Engineering Co., Mankato, Minn.
Marathon Electric Mfg. Corp., Wausau, Wis.
Onan & Sons, Inc., D. W., Minneapolis, Minn.
Thor Power Tool Co., Aurora, Ill.

GENERATORS, STEAM, ELECTRIC (Electrically "Fired" Boilers)

Custom Engrg. Co., Los Angeles, Calif.
Hill Diesel Engine Corp., Lansing, Mich.
Pantex Mfg. Corp., Pawtucket, R. I.
Precision Parts Corp., Nashville, Tenn.
Tejax Engineering Corp., Pawtucket, R. I.

GLASS, HEAT ABSORBING

See Windows, Heat Insulating

GLASS PIPE

See Pipe, Glass

GLASSES, GAGE

Associated Valve & Engineering Co., North Wales, Pa.
Chesterton Co., A. W., Everett, Mass.
Chicago Specialty Mfg. Co., Chicago, Ill.
Corning Glass Works, Corning, N. Y.
Defender Instrument & Regulator Co., Boody, Ill.
Diamond Power Specialty Corp., Lancaster, O.
Ernst Water Column & Gauge Co., Livingston, N. J.
Henry Valve Co., Melrose Park, Ill.
Libbey-Owens-Ford Glass Co., Toledo, O.
Longergan Co., J. E., Philadelphia, Pa.
Lunkenheimer Co., Cincinnati, O.
New York Air Valve Corp., Brooklyn, N. Y.
OPW Corp., Cincinnati, O.
Penberty Mfg. Co., Div. of Buffalo Eclipse Corp., Detroit, Mich.
Reliance Gauge Column Co., Cleveland, O.
Scientific Instrument Co., Detroit, Mich.
Shank Co., Cyrus, Chicago, Ill.
Strahman Valves, Inc., New York, N. Y.
Swift Lubricator Co., The, Elmira, N. Y.
Uehling Instrument Co., Paterson, N. J.
Vilter Mfg. Co., The, Milwaukee, Wis.

GLASSES, SIGHT, FOR PIPE LINES

Adsco Div., Yuba Consolidated Industries, Inc., Buffalo, N. Y.
Allin Mfg. Co., Chicago, Ill.
Ansul Chemical Co., Refrigeration Div., Marinette, Wis.
Chesterton Co., A. W., Everett, Mass.
Cochrane Corp., Philadelphia, Pa.
Corning Glass Works, Corning, N. Y.
Ernst Water Column & Gauge Co., Livingston, N. J.
Fischer & Porter Co., Hatboro, Pa.
Imperial Brass Mfg. Co., Chicago, Ill.
Jordan Corp., Div. of OPW Corp., Cincinnati, O.

Kerotest Mfg. Co., Pittsburgh, Pa.
Libbey-Owens-Ford Glass Co., Toledo, O.
McIntire Co., The, Livingston, N. J.
Mueller Brass Co., Port Huron, Mich.
Norwood Associated Engineers, Inc., Springfield, Mass.
OPW Corp., Cincinnati, O.
Penberthy Mfg. Co., Div. of Buffalo Eclipse Corp., Detroit, Mich.
Remco, Inc., Zelienople, Pa. (for refrigerant lines)
Sarco Co., Inc., New York, N. Y.
Schutte and Koerting Co., Cornwells Heights, Bucks County, Pa.
Scientific Instrument Co., Detroit, Mich.
Sporlan Valve Co., St. Louis, Mo.
Superior Valve & Fittings Co., Pittsburgh, Pa.
Swift Lubricator Co., The, Elmira, N. Y.

GLOBE VALVES

See Valves, Globe

GLYCOL VAPORIZERS

See Units, Sterilizing, Air

GOVERNORS, PUMP

Atlas Valve Co., Newark, N. J.
Bailey Co., Chas. M., San Francisco, Calif.
Black, Sivalls & Bryson, Inc., Kansas City, Mo.
Boylston Steam Specialty Co., Chicago, Ill.
Burrows Mfg. Co., F. A., York, Pa.
Cash Co., A. W., Decatur, Ill.
Copes-Vulcan Div., Blaw-Knox Co., Erie, Pa.
Davis Regulator Co., Chicago, Ill.
Defender Instrument and Regulator Co., Boody, Ill.
Fisher Governor Co., Marshalltown, Ia.
Foster Engineering Co., Union, N. J.
Fulton Sylphon Div., Robertshaw-Fulton Controls Co., Knoxville, Tenn.
Keckley Co., O. C., Skokie, Ill.
Kieley & Mueller, Inc., Middletown, N. Y.
Klipfel Valves, Inc., Hamilton, O.
Leslie Co., Lyndhurst, N. J.
Locke Regulator Co., Salem, Mass.
Mason-Neilan Div. of Worthington Corp., Norwood, Mass.
McAlear Mfg. Co., Chicago, Ill.
Schade Valve Mfg. Co., Philadelphia, Pa.
Spence Engineering Co., Inc., Walden, N. Y.
Squires Co., C. E., Cleveland, O.
Staples & Pfeiffer, San Francisco, Calif.
Synchro-Start Products, Inc., Skokie, Ill.
Warren Engineering Co., Broadway, N. J.
Watson & McDaniel Co., Philadelphia, Pa.
Willams Gauge Co., Inc., The, Pittsburgh, Pa.

GRILLES

See also Diffusers; Panels, Perforated, for Air Diffusion; Registers

A. & A. Register Co., Cleveland, O.
A-J Mfg. Co., Kansas City, Mo.
Air Control Products, Inc., Coopersville, Mich.
Air Devices, Inc., New York, N. Y.
Air Distribution Products Co., Los Angeles, Calif.
Air-Factors, Inc., Monrovia, Calif.
Air-Path Products Co., Baltimore, Md. (stamped steel)
Alton Mfg. Co., Dallas, Tex.
American Warming & Ventilating Co., Toledo, O.
Auer Register Co., Cleveland, O.
Austin Engineering & Mfg. Co., Inc., Ysleta, Tex.
Bahnson Co., Winston-Salem, N. C.
Barber-Colman Co., Rockford, Ill.
Beckley Perforating Co., Garwood, N. J.
Bowman Inc., D. F., Clearwater, Fla.
Carnes Corp., Verona, Wis.
Central Iron & Wire Works, Des Moines, Ia.
Char-Gale Mfg. Co., Minneapolis, Minn.
Controlair Mfg. Co., Los Angeles, Calif.
Corbman Bros., Inc., Philadelphia, Pa.
Diamond Mfg. Co., Wyoming, Pa.
Empire Ventilation Equipment Co., Long Island City, N. Y.
Erdle Perforating Co., Rochester, N. Y.
General Air Products Corp., Cedar Grove, N. J.
Harrington & King Perforating Co., Inc., Chicago, Ill.
Hart & Cooley Mfg. Co., Holland, Mich.
Hendrick Mfg. Co., Carbondale, Pa.
Independent Register Co., Cleveland, O.
Johnston & Chapman Co., Chicago, Ill.
Krueger Air Conditioning Corp., Tucson, Ariz.
Lenly Mfg. Co., Inc., Los Angeles, Calif.
Lima Register Co., The, Lima, O.
Manhattan Perforated Metal Co., Inc., Long Island City, N. Y.
Midco Register Corp., St. Paul, Minn.
Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.
Mundt & Sons, Charles, Jersey City, N. J.
Register & Grille Mfg. Co., Inc., Brooklyn, N. Y.
Robertson Co., H. H., Pittsburgh, Pa.
Rock Island Register Co., Rock Island, Ill.
Smith Co., J. B., Philadelphia, Pa.
Standard Stamping & Perforating Co., Chicago, Ill.
Thermotank, Inc., Products Div., Detroit, Mich.
Titus Mfg. Corp., Waterloo, Iowa.
Tuttle & Bailey, Div. of Allied Thermal Corp., New Britain, Conn.
United States Register Co., Battle Creek, Mich.
Universal Diffuser Corp., Tuckahoe, N. Y.
Viking Mfg. Corp., Cleveland, O.
Waterloo Register Co., Inc., Waterloo, Ia.
Western Wire & Iron Works, Inc., Chicago, Ill. (metal)
Wickwire Spencer Steel Div., The Colorado Fuel & Iron Corp., New York, N. Y.
Young Regulator Co., Cleveland, O.

GRILLES, DOOR

Barber-Colman Co., Rockford, Ill.
General Air Products Corp., Cedar Grove, N. J.
Independent Register Co., Cleveland, O.
Titus Mfg. Corp., Waterloo, Ia.
Universal Diffuser Corp., Tuckahoe, N. Y.
Ventilouvre Co., Inc., The, Marietta, O.
Waterloo Register Co., Inc., Waterloo, Ia.
Young Regulator Co., Cleveland, O.

GRINDERS AND GRINDING WHEELS, WELD

Airetool Mfg. Co., Springfield, O.
Albertson & Co., Inc., Sioux City, Ia.
Baldor Electric Co., St. Louis, Mo.
Black & Decker Mfg. Co., The, Towson, Md.
Buckeye Tools Corp., Dayton, O.
Chicago Pneumatic Tool Co., New York, N. Y.
Cincinnati Electrical Tool Co., The, Cincinnati, O.
Cilzbe Bros. Mfg. Co., Plymouth, Ind.
Franklin Balmar Corp., Baltimore, Md.
Gardner-Denver Co., Quincy, Ill.
Mall Tool Co., Div. of Remington Arms Co., Inc., Chicago, Ill.
Milwaukee Electric Tool Corp., Milwaukee, Wis.
Norton Co., Worcester, Mass.
Portable Electrical Tools, Inc., Chicago, Ill.
Raybestos-Manhattan, Inc., Passaic, N. J.
Roto Tool Co., Cleveland, O.
Skil Corp., Chicago, Ill.
Speedway Mfg. Co., Div. of Thor Power Tool Co., Chicago, Ill.
Stanley Electric Tools, Div. of The Stanley Works New Britain, Conn.
Stanley Works The, New Britain, Conn.
Thor Power Tool Co., Aurora, Ill.
United States Electrical Tool Co., Cincinnati, O.

GROOVERS, PLASTER, ELECTRIC, PORTABLE

Wodack Electric Tool Corp., Chicago, Ill.

GUARDS, THERMOSTAT, TO PREVENT TAMPERING

Better Engineered Controls, Los Angeles, Calif.
Powers Regulator Co., Skokie, Ill.

GUNS, POTS AND CANDLES, SMOKE AND SMUDGE, FOR TESTING AIR MOVEMENT

Air Control Products, Inc., Coopersville, Mich.
Design Engineers, Rockford, Ill.
Hill & Co., E. Vernon, Lake Geneva, Wis.
Kilgore, Inc., International Flare-Signal Div., Westerville, O.
Mine Safety Appliances Co., Pittsburgh, Pa.

HAMMERS, ELECTRIC, PORTABLE

Black & Decker Mfg. Co., The, Towson, Md.
Hamer-Dril Co., New York, N. Y.
Ingersoll-Rand Co., New York, N. Y.
Millers Falls Co., Greenfield, Mass.
Milwaukee Electric Tool Corp., Milwaukee, Wis.
Phillips Drill Co., Michigan City, Ind.
Port City Machine & Tool Co., Muskegon, Mich.
Rotor Tool Co., Cleveland, O.
Stanley Works, The, New Britain, Conn.
Super Slugger Co., Bedford, O.
Syntron Co., Homer City, Pa.
Wodack Electric Tool Corp., Chicago, Ill.

HAND SHEARS

See Shears and Snips, Hand

HANGERS OR BRACKETS, RADIATOR

Arjac Products, Inc., Rochester, N. Y.
Carpenter & Paterson, Inc., Cambridge, Mass.
Crawford Co., Chicago, Ill.
Fee & Mason Mfg. Co., Inc., Manasquan, N. J.
Gateway Engineering Co., Chicago, Ill.
Hartmann Co., Chas., Brooklyn, N. Y.
Healy Ruff Co., St. Paul, Minn.
Jennison Co., The, Fitchburg, Mass. (Adjustable radiator foot rest)
Leibfried Mfg. Corp., C. H., Brooklyn, N. Y.
Modern Hanger Corp., The. Cleveland, O.
National-U. S. Radiator Corp., Johnstown, Pa.
Rittling Corp., The, Buffalo, N. Y.
Unistrut Products Co., Chicago, Ill.

HANGERS, PIPE, CONSTANT SUPPORT (SPRING)

Basic Engineers, Inc., Sharpsburg, Pa.
Fee & Mason Mfg. Co., Inc., Manasquan, N. J. (malleable iron; cast iron; steel)
Leibfried Mfg. Corp., C. H., Brooklyn, N. Y.

HANGERS AND SUPPORTS, DUCT

Acme Mfg. Co., Philadelphia, Pa.
Adelta Mfg. Co., Inc., Philadelphia, Pa. (galvanized)
Bergen Pipesupport Corp., New York, N. Y. (variable spring & constant supports)
Clayton & Lambert Mfg. Co., Louisville, Ky. (metal)
Corbman Bros., Inc., Philadelphia, Pa.
Excelsior Steel Furnace Co., The, Chicago, Ill.
Finn & Co., Inc., T. R., Hawthorne, N. J. (vibration)
Hexdall Co., A. M., Morris, Ill. (duct and furnace round pipe, furnace, square)
Inland Steel Products Co., Milwaukee, Wis. (galvanized)
Korfund Co., Inc., Long Island City, N. Y.
Modern Hanger Corp., The, Cleveland, O.
Moore Inc., Goodloe E., Danville, Ill.
Mueller Brass Co., Port Huron, Mich (perforated strap)
Omark Industries, Inc., Portland, Ore.
Phillips Drill Co., Michigan City, Ind. (self-drilling expansion shells)
Redi-Bolt, Inc., East Chicago, Ind. (continuous threaded steel rod)
Remington Arms Co., Inc., Bridgeport, Conn. (stud, pin and threaded types)
Steel City Electric Co., Pittsburgh, Pa (trapeze)
Unistrut Products Co., Chicago, Ill.
Velocity Power Tool Co., Div. of Mine Safety Appliances Co., Pittsburgh, Pa. (cartridge stud driver)
Williamson Co., Cincinnati, O. (galvanized)

HANGERS AND SUPPORTS, PIPE

Acme Steel Co., Chicago, Ill. (slotted angle)
Adsco Div., Yuba Consolidated Industries, Inc., Buffalo, N. Y. (cast)
Air-Path Products Co., Baltimore, Md. (inserts)
American Tube Products, Inc., West Warwick, R. I. (copper tube)
Basic Engineers Inc., Sharpsburg, Pa.
Bergen Pipesupport Corp., New York, N. Y. (variable spring, constant support and hanger assemblies)
Blaw Knox Co., Power Piping and Sprinkler Div., Pittsburgh, Pa. (spring and solid)
Carpenter & Paterson, Inc., Cambridge, Mass.

Chase Brass & Copper Co., Waterbury, Conn. (copper strap)
Commercial Plastics Co., Chicago, Ill. (plastic strap)
Crawford Co., Chicago, Ill.
Elcen Metal Products Co., Franklin Park, Ill.
Fee & Mason Mfg. Co., Inc., Manasquan, N. J. (malleable iron; cast iron; steel)
Finn & Co., Inc., T.R., Hawthorne, N. J. (Rubber-in-shear & steel spring)
Flexonics Corp., Maywood, Ill. (pipe guides)
Frick Co., Waynesboro, Pa.
Gateway Engineering Co., Chicago, Ill.
General Fittings Co., East Greenwich, R. I. (strap hangers)
Gerrard & Co., A. J., Melrose Park, Ill. (strap)
Globe Products, Huppower Div., Hupp Corp., Detroit, Mich. (clevis swivel)
Grabler Mfg. Co., Cleveland, O.
Grinnell Co., Inc., Providence, R. I.
Handy Angle Div., The Lugall Co., Haverford, Pa.
Holub Industries, Inc., Sycamore, Ill. (steel and plastic)
Industrial Sheet Metal Work, Chicago, Ill.
Industrial Tubular Equipment Co., North Hollywood, Calif.
Korfund Co., Inc., Long Island City, N. Y.
L. K. Iron Works, New York, N. Y.
Leibfried Mfg. Corp., C. H., Brooklyn, N. Y. (spring hangers and roller hangers)
Midwest Piping Co., Inc., St. Louis, Mo.
Minerallac Electric Co., Chicago, Ill.
Modern Hanger Corp., The, Cleveland, O.
Moore Inc., Goodloe E., Danville, Ill.
Mult-A-Frame Div., Ainsworth Mfg. Corp., Detroit, Mich.
National U. S. Radiator Corp., Johnstown, Pa.
National Valve & Mfg. Co., Pittsburgh, Pa. (counterpoise)
Nibco, Inc., Elkhart, Ind. (copper tube)
Omark Industries, Inc., Portland, Ore.
Paine Co., Addison, Ill. (snug fit wire pipe hooks; pipe straps; rings and bolts; perforated hanger iron)
Phillips Drill Co., Michigan City, Ind. (self-drilling expansion shells)
Pipeline Coatings & Engineering Co., Los Angeles, Calif.
Piping Specialties, Inc., New York, N. Y. (anchor and guide for expansion joints; spring and all types)
Power Strut, Inc., Framingham, Mass.
Ramset Fastening System, Winchester-Western Div., Olin Mathieson Chemical Corp., Cleveland, O. (conduit clips)
Ravena Iron Co., Ravena, N. Y. (hook plates)
Redi-Bolt, Inc., East Chicago, Ind. (continuous threaded steel rod)
Remington Arms Co., Inc., Bridgeport, Conn. (stud, threaded type)
Republic Steel Corp., Cleveland, O. (pressed steel inserts)
Ritter Pattern & Casting Co., New York, N. Y. (jack type adjustable tunnel stanchion and tunnel stanchion brackets with U bolts)
Rockwood Sprinkler Co., Worcester, Mass.
Saussé & Co., M. W., Los Angeles, Calif. (cork, rubber-in-shear, and spring)
Schaub Engineering Co., Fred H., Chicago, Ill. (pipe stands)
Steel City Electric Co., Pittsburgh, Pa. (clamps, clips, rollers, hangers)
Stic-Klip Mfg. Co., Inc., Cambridge, Mass. for ¼ and ¾ in. diam. pipe and tubing)
Unistrut Products Co., Chicago, Ill.
Velocity Power Tool Co., Div. of Mine Safety Appliances Co., Pittsburgh, Pa. (cartridge stud driver)
Vibration Mountings, Inc., Corona, N. Y. (vibration hangers)
Western Wire Products Co., St. Louis, Mo. (wire pipe hooks and perforated hanger iron; copper tubing hanger & slings; galvanized and copper coated pipe straps)
Williamson, Inc., T. D., Tulsa, Okla. (cradles)

HARD RUBBER PIPE AND FITTINGS

See Pipe, Hard Rubber; Fittings, Pipe, Hard Rubber

HARDWARE

See Parts for Heating and Air Conditioning Equipment

HEADERS, PIPE, WELDED

Albert Pipe Supply Co., Inc., Brooklyn, N. Y.
American Pipe & Steel Corp., Alhambra, Calif.
Armco Drainage & Metal Products, Inc., Welded Pipe Sales Div., Middletown, O.
Atlantic Pipe Bending & Fabricating Corp., Moonachie, N. J.
Biggs Boiler Wks. Co., The, E. Akron, O.
Blaw Knox Co., Power Piping and Sprinkler Div., Pittsburgh, Pa.
Buffalo Tank Corp., Dunellen, N. J.
Chicago Nipple Mfg. Co., Oak Park, Ill.
Clow & Sons, Inc., James B., Chicago, Ill.
Cobra Pipe Supply & Coil Co., Inc., Elmwood, Conn.
Condenser Service & Engineering Co., Inc., Hoboken, N. J.
Crane Co., Chicago, Ill.
Crotty Mfg. Corp., Flushing, Long Island, N. Y.
Downingtown Iron Works, Inc., Div. of Pressed Steel Tank Co., Downingtown, Pa.
Dravo Corp., Machinery Div., Pittsburgh, Pa.
Fibercast Co., Sand Spring, Okla.
Flori Pipe Co., The, St. Louis, Mo.
Fluor Products Co., Whittier, Calif.
Grinnell Co., Inc., Providence, R. I.
Heat & Power Corp., Baltimore, Md.
Industrial Plastic Fabricators, Norwood, Mass. (PVC)
Kellogg Co., M. W., The, New York, N. Y.
Ladish Co., Cudahy, Wis.
Marquette Coppersmithing Co., Philadelphia, Pa.
Midwest Piping Co., Inc., St. Louis, Mo.
Mitchell & Co., Inc., W. K., Philadelphia, Pa.
National Pipe Bending Co., New Haven, Conn.
National Valve & Mfg. Co., Pittsburgh, Pa.
Naylor Pipe Co., Chicago, Ill.
Ohio Pipe Bending & Machine Co., Cleveland, O.
Philadelphia Pipe Bending Co., Philadelphia
Pittsburgh Pipe Coil & Bending Co., Etna, Pittsburgh, Pa.
Pittsburgh Piping & Equipment Co., Pittsburgh, Pa.
Portland Copper and Tank Works, Inc., South Portland, Me.
Reco Products Div., Recony Corp., New York, N. Y.
Red Jacket Co., Inc., Carnegie, Pa.
Rempe Co., Chicago, Ill.
Richmond Engineering Co., Richmond, Va.
Roessing Mfg. Co., Pittsburgh, Pa.
Sales & Co., Murray W., Detroit, Mich.
Semet-Solvay Engineering Div., Allied Chemical Corp., New York, N. Y.
Shaw Co., Benjamin F., Wilmington, Del.
Shaw-Kendall Engineering Co., Toledo, O.
Star Tubular Products Co., Chicago, Ill.
Superior Valve & Fittings Co., Pittsburgh, Pa.
Taylor Engineering Corp., Detroit, Mich.
Taylor Forge & Pipe Wks., Chicago, Ill.
Vilter Mfg. Co., Milwaukee, Wis.
Walworth Co., New York, N. Y.
Western Piping & Engineering Co., Inc., San Francisco, Calif.
Whitlock Mfg. Co., W. Hartford, Conn.

HEADS, EXHAUST, FOR PIPE LINES

Anderson Co., V. D., The, Div. of International Basic Economy Corp., Cleveland, O.
Centrifix Corp., Cleveland, O.
Cochrane Corp., Philadelphia, Pa.
Hoppes Mfg. Co., Inc., Springfield, O.
Illinois Engineering Products, American Air Filter Co., Inc., Louisville, Ky.
Swartwout Co., The, Cleveland, O.
Wright-Austin Co., Detroit, Mich.

HEADS, SAFETY

Black, Sivalls & Bryson, Inc., Kansas City, Mo.
Falls Industries, Inc., Solon, O.

HEADS, SPRINKLER, FOR FIRE PROTECTION

Grinnell Co., Inc., Providence, R. I.
Hodgman Mfg. Co., Inc., Taunton, Mass.
Raisler Corp., Grimes Sprinkler Div., New York, N. Y.
Rockwood Sprinkler Co., Worcester, Mass.

HEAT EXCHANGERS

See Chillers, Water; Condensers, Refrigerating; Exchangers, Heat; Surface, Finned, Cooling; Surface, Finned, Heating

HEAT PUMP SWITCHING VALVES

See Valves, Switching, Heat Pump

HEAT PUMPS

See Units, Air Conditioning, Reverse Refrigeration Cycle

HEAT RECOVERY UNITS

See Units, Heat Recovery

HEAT REGENERATORS

See Units, Heat Recovery

HEATERS, AIR, DIRECT FIRED, COAL

For Furnaces for Central Plant Installation, EXCLUSIVELY for Duct Distribution of the Air, See the Listing Under Furnaces

American Furnace Co., St. Louis, Mo.
Armstrong Furnace Co., Div. of National Union Electric Corp., Columbus, O.
Campbell Co., E. K., Kansas City, Mo.
Campbell Heating Co., Des Moines, Ia.
Jackson & Church Co., Saginaw, Mich.
MaGirl Foundry & Furnace Co., Bloomington, Ill.
Meyer Furnace Co., The, Peoria, Ill.
National Heater Co., Inc., St. Paul, Minn.
Rosebraugh Co., W. W., Salem, Ore.

HEATERS, AIR, DIRECT FIRED, COMBINATION GAS AND OIL

For Furnaces for Central Plant Installation, EXCLUSIVELY for Duct Distribution of the Air, See the Listing Under Furnaces

Air Conditioning Engineering Co., Cambridge, Mass.
Airtherm Mfg. Co., St. Louis, Mo.
Arkos Mfg. Co., Detroit, Mich.
Campbell Co., E. K., Kansas City, Mo.
Chicago Steel Furnace Co., Chicago, Ill.
Dravo Corp., Machinery Div., Pittsburgh, Pa.
Drying Systems Co., Chicago, Ill.
Freeman Heating Div., Illinois Iron & Bolt Co., Carpentersville, Ill.
Gas Machinery Co., Cleveland, O.
Inland Heater Corp., Minneapolis, Minn.
Jackson & Church Co., Saginaw, Mich.
Johnson Heater Corp., Chelsea, Mass.
Lee Corp., Wilmington, Del.
Lennox Industries Inc., Des Moines, Ia.
Lennox Industries Inc., Columbus, O.
MaGirl Foundry & Furnace Co., Bloomington, Ill.
Mammoth Furnace Co., Minneapolis, Minn.
National Heater Co., Inc., St. Paul, Mich.
Newcomb-Detroit Co., Detroit, Mich.
Prat-Daniel Corp., Thermobloc Div., South Norwalk, Conn.
Reznor Mfg. Co., Mercer, Pa.

HEATERS, AIR, DIRECT FIRED, GAS, CENTRIFUGAL FAN TYPE

For Furnaces for Central Plant Installation, EXCLUSIVELY for Duct Distribution of the Air, See the Listing Under Furnaces

Air Conditioning Engineering Co., Cambridge, Mass.
Airtherm Mfg. Co., St. Louis, Mo.
American Foundry & Furnace Co., Bloomington, Ill.
American Furnace Co., St. Louis, Mo.
Arkos Mfg. Co., Detroit, Mich.
Auburn Burner Co., Auburn, Ind.
Besser Furnace and Air Conditioning Corp., Charlotte, N. C.
BTU Industries, Inc., Englewood, N. J.
Burdett Mfg. Co., Chicago, Ill.
Campbell Co., E. K., Kansas City, Mo.
Campbell Heating Co., Des Moines, Ia.
Carrier Corp., Syracuse, N. Y.
Chicago Steel Furnace Co., Chicago, Ill.
David-Ludwig Co., Detroit, Mich.
Dravo Corp., Machinery Div., Pittsburgh, Pa.
Drying Systems Co., Chicago, Ill.
General Gas Light Co., Kalamazoo, Mich.
Hastings Air Control, Inc., Omaha, Nebr.
Hayes Furnace Mfg. & Supply Co., Los Angeles, Calif.
Inland Heater Corp., Minneapolis, Minn.

Jackson & Church Co., Saginaw, Mich.
Janitrol Heating & Air Conditioning Div., Surface Combustion Corp., Columbus, O.
Johnson Heater Corp., Chelsea, Mass. (with and without ducts)
Kilbury Mfg. Co., Inc., Lawndale, Calif.
Lennox Industries Inc., Des Moines, Ia.
MaGirl Foundry & Furnace Co., Bloomington, Ill.
Mammoth Furnace Co., Minneapolis, Minn.
Mid-Continent Metal Products Co., Chicago, Ill.
Modine Mfg. Co., Racine, Wis.
Mueller Climatrol, Div. of Worthington Corp., Milwaukee, Wis.
National Heater Co., Inc., St. Paul, Minn.
Newcomb-Detroit Co., Detroit, Mich.
Norman Products Co., Inc., Columbus, O.
OverHead Heaters, Inc., Detroit, Mich.
Payne Company, La Puente, Calif.
Peerless Mfg. Div., Dover Corp., Louisville, Ky.
Prat-Daniel Corp., Thermobloc Div., South Norwalk, Conn.
Reznor Mfg. Co., Mercer, Pa.
Rockwell Co., W. S., Fairfield, Conn.
Sterlairco, Inc., Westfield, Mass.
Stewart-Warner Corp., Heating & Air Conditioning Div., Lebanon, Ind.
Stewart-Warner Corp., South Wind Div., Indianapolis, Ind.
Surface Combustion Corp., Toledo, O.
Tjernlund Mfg. Co., St. Paul, Minn.
Tuck-Aire Furnace Co., San Francisco, Calif.
United States Air Conditioning Corp., Delaware, O.
Utility Appliance Corp., Los Angeles, Calif.
Vapor Heating Corp., Chicago, Ill.
Young Radiator Co., Racine, Wis.
Zink Co., John, Tulsa, Okla.

HEATERS, AIR, DIRECT FIRED, GAS, PORTABLE, FOR SPACE HEATING

(State capacity)

Aeroil Products Co., Inc., South Hackensack, N. J. (125,000 to 500,000 Btu per hr)
Arkos Mfg. Co., Detroit, Mich.
Armstrong Furnace Co., Div. of National Union Electric Corp., Columbus, O.
Bica Co., Girard, O. (50,000-85,000 Btu)
BTU Industries, Inc., Englewood, N. J. (70,000 to 100,000 Btu per hr)
Coleman Co., Inc., The, Wichita, Kans.
Coolerator Div., McGraw-Edison Co., Albion, Mich.
Insto-Gas Corp., Detroit, Mich.
Johnson Heater Corp., Chelsea, Mass. (500,000 Btu per hr)
Mammoth Furnace Co., Minneapolis, Minn.
National Heater Co., Inc., St. Paul, Minn.
Prat-Daniel Corp., Thermobloc Div., South Norwalk, Conn.
Reznor Mfg. Co., Mercer, Pa. (400,000 to 2,000,000 Btu per hr output)
Summit Products Co., Uniontown, Pa. (125,000 to 250,000 Btu)
Union Chill Mat Co., Pittsburgh, Pa.
Vacuum Gas Burner Co., Olean, N. Y. (35,000 to 65,000 Btu per hr)
Weldit, Inc., Detroit, Mich. (100,000 Btu per hr; for LP Gas)

HEATERS, AIR, DIRECT FIRED, OIL, FLOOR TYPE

For Furnaces for Central Plant Installation, EXCLUSIVELY for Duct Distribution of the Air, See the Listing Under Furnaces

Air Conditioning Engineering Co., Cambridge, Mass.
Airtherm Mfg. Co., St. Louis, Mo.
American Foundry & Furnace Co., Bloomington, Ill.
Arkos Mfg. Co., Detroit, Mich.
Armstrong Furnace Co., Div. of National Union Electric Co., Columbus, O.
Campbell Co., E. K., Kansas City, Mo.
Campbell Heating Co., Des Moines, Ia.
Carrier Corp., Syracuse, N. Y.
Chicago Steel Furnace Co., Chicago, Ill.
Dravo Corp., Machinery Div., Pittsburgh, Pa.
Drying Systems Co., Chicago, Ill.
Freeman Heating Div., Illinois Iron & Bolt Co., Carpentersville, Ill.
Gilbert & Barker Mfg. Co., West Springfield, Mass.
Inland Heater Corp., Minneapolis, Minn.
Jackson & Church Co., Saginaw, Mich.
Janitrol Heating & Air Conditioning Div., Surface Combustion Corp., Columbus, O.
Johnson Heater Corp., Chelsea, Mass. (with and without ducts)
Lee Corp., Wilmington, Del.
Lennox Industries Inc., Des Moines, Ia.
MaGirl Foundry & Furnace Co., Bloomington, Ill.
Mammoth Furnace Co., Minneapolis, Minn.
Meyer Furnace Co., The, Peoria, Ill.
National Heater Co., Inc., St. Paul, Minn.
Prat-Daniel Corp., Thermobloc Div., South Norwalk, Conn.
Reznor Mfg. Co., Mercer, Pa.
Ross Engineering Div., J. O., Midland-Ross Corp., New York, N. Y.
Tjernlund Mfg. Co., St. Paul, Minn.
Vapor Heating Corp., Chicago, Ill.
Williams Oil-O-Matic Heating Co., Div. of National Union Electric Corp., Columbus, O.
York-Shipley, Inc., York, Pa.

HEATERS, AIR, DIRECT FIRED, OIL, PORTABLE, FOR SPACE HEATING

Air Conditioning Engineering Co., Cambridge, Mass. (200,000; 285,000; 425,000 and 635,000 Btu)
Airtherm Mfg. Co., St. Louis, Mo. (400,000 to 2,000,000 Btu output per hr)
American Foundry & Furnace Co., Bloomington, Ill. (400,000-2,000,000 Btu per hr)
Arkos Mfg. Co., Detroit, Mich. (120,000 Btu per hr to 3,500,000 Btu per hr.)
Armstrong Furnace Co., Div. of National Union Electric Co., Columbus, O.
Auburn Burner Co., Auburn, Ind.
BTU Industries, Inc., Englewood, N. J. (70,000 to 100,000 Btu per hr)
Campbell Heating Co., Des Moines, Ia. (Up to 3,150,000 Btu)
Cauhorn Distributing Co., Detroit, Mich. (190,000 Btu)
Certified Furnace Corp., Trenton, N. J. (112 — 280,000 Btu per hr output)
Chicago Steel Furnace Co., Chicago, Ill.
Clayton Mfg. Co., El Monte, Calif. (120,000 to 240,000 Btu per hr output)
Coleman Co., Inc., The, Wichita, Kans.
Coolerator Div., McGraw-Edison Co., Albion, Mich.
Interstate Heater Mfg. Co., Denver, Colo. (80,000-180,000 Btu per hr)
Jackson & Church Co., Saginaw, Mich. (400,000 Btu — 2,000,000 Btu per hr output at Bonnet)
Johnson Heater Corp., Chelsea, Mass. (500,000 Btu)
Lennox Industries Inc., Des Moines, Ia. (400,000 — 2,000,000 Btu per hr.)
Lennox Industries Inc., Marshalltown, Ia. (245,000 Btu per hr)
Mammoth Furnace Co., Minneapolis, Minn.
Master Vibrator Co., Dayton, O.
National Heater Co., Inc., St. Paul, Minn.
Prat-Daniel Corp., Thermobloc Div., South Norwalk, Conn. (100,000 Btu up to 2,225,000 Btu)
Quiet Automatic Oil Burner Corp., Newark, N. J.
Reznor Mfg. Co., Mercer, Pa. (400,000 to 2,000,000 Btu per hr output)
Stow Mfg. Co., Binghamton, N. Y.
Tjernlund Mfg. Co., St. Paul, Minn.

HEATERS, AIR, DIRECT FIRED, OIL, SUSPENDED TYPE

For Furnaces for Central Plant Installation, EXCLUSIVELY for Duct Distribution of the Air, See the Listing Under Furnaces

Air Conditioning Engineering Co., Cambridge, Mass.
Airtherm Mfg. Co., St. Louis, Mo.
American Furnace Co., St. Louis, Mo.
Arkos Mfg. Co., Detroit, Mich.
Armstrong Furnace Co., Div. of National Union Electric Corp., Columbus, O.
Auburn Burner Co., Auburn, Ind.
Auburn Burner Co., Edgerton, O.
Bard Mfg. Co., Bryan, O.
Besser Furnace and Air Conditioning Corp., Charlotte, N. C.
Campbell Co., E. K., Kansas City, Mo.
Century Engineering Corp., Cedar Rapids, Ia.
Chicago Steel Furnace Co., Chicago, Ill.
Cox Mfg. Co., Ridgeville, Ind.
Delco Appliance Div., General Motors Corp., Rochester, N. Y.
Dravo Corp., Machinery Div., Pittsburgh, Pa.
Freeman Heating Div., Illinois Iron & Bolt Co., Carpentersville, Ill.
General Automatic Products Corp., Baltimore, Md.
Ingersoll Conditioned Air Div., Borg-Warner Corp., Kalamazoo, Mich.
Inland Heater Corp., Minneapolis, Minn.
Interstate Heater Mfg. Co., Denver, Colo.
Jackson & Church Co., Saginaw, Mich.
Johnson Heater Corp., Chelsea, Mass.
Kaustine Furnace & Tank Corp., Perry, N. Y.
Lee Corp., Wilmington, Del.
Lennox Industries Inc., Des Moines, Ia.
Lennox Industries Inc., Columbus, O.
Mammoth Furnace Co., Minneapolis, Minn.
Montag Inc., Portland, Ore.
Mueller Climatrol, Div. of Worthington Corp., Milwaukee, Wis.
National Heater Co., Inc., St. Paul, Minn.
Olsen Mfg. Co., C. A., Elyria, O.
OverHead Heaters, Inc., Detroit, Mich.
Patten Co., J. V., Sycamore, Ill.
Prat-Daniel Corp., Thermobloc Div., South Norwalk, Conn.
Reznor Mfg. Co., Mercer, Pa.
Scaife Co., Oakmont, Pa.
Stewart-Warner Corp., Heating & Air Conditioning Div., Lebanon, Ind.
Syncromatic Corp., Watertown, Wis.
Thermo-Products, Inc., North Judson, Ind.
Tjernlund Mfg. Co., St. Paul, Minn.
Viking Mfg. Corp., Cleveland, O.
Waterman-Waterbury Co., The, **Minneapolis, Minn.**
Weatherall **Engineers, Inc., Providence, R. I.**
Williams Div., Eureka Williams Corp., Bloomington, Ill.
Williamson Co., Cincinnati, O.
York-Shipley, Inc., York, Pa.

HEATERS, CONVECTION

See Radiation, Convection Type

HEATERS, DUCT, ELECTRIC

Consolidated **Metal Products Corp., Albany, N. Y.**
Edison Heatube Div., McGraw-Edison Co., Allegan, Mich.
Electrend Products Corp., St. Joseph, Mich.
Electromode Div. of Commercial Controls Corp., Rochester, N. Y.
Falcon Equipment Co., New Brighton, Pa.
General Electric Co., Apparatus Sales Div., Schenectady, N. Y.
Hynes Electric Heating Div., Turbine Equipment Co., Westfield, N. J.
Industrial Engineering & Equipment Co., St. Louis, Mo.
Kilbury **Mfg. Co., Inc., Lawndale, Calif.**
Montgomery Bros., San Francisco, Calif.
Tenney **Engineering, Inc., Newark, N. J.**
Trent, Inc., **Philadelphia, Pa.**
Vulcan Electric Co., **Danvers, Mass.**
Waage Electric, Inc., Kenilworth, N. J.
Wesix Electric **Heater Co., San Francisco.**
Wiegand Co., **Edwin L., Pittsburgh, Pa.**
Wing Mfg. Co., L. J., Div. of Aero Supply Mfg. Co., Inc., Linden, N. J.

HEATERS, DUCT, GAS

Arkos Mfg. Co., Detroit, Mich.
Bryant Mfg. Co., Indianapolis, Ind.
Campbell Heating Co., Des Moines, Ia
Carrier Corp., Syracuse, N. Y.
Century Engineering Corp., Cedar Rapids, Ia
Chicago Steel Furnace Co., Chicago, Ill.
Day & Night Mfg. Co., La Puente, Calif.
Dravo Corp., **Machinery Div., Pittsburgh, Pa.**
Fedders-Quigan Corp., Heating Div., Trenton, N. J.
General Gas Light Co., Kalamazoo, Mich.
Hastings Air Control, Inc., Omaha, Nebr.
Hayes Furnace Mfg. & Supply Co., Los Angeles, Calif.
Inland Heater Corp., Minneapolis, Minn.
Jackson & Church Co., Saginaw, Mich.
Janitrol Heating & Air Conditioning Div., Surface Combustion Corp., Columbus, O.
Johnson Heater Corp., Chelsea, Mass.
Kehm Corp., The, Chicago, Ill.
Kleer Kleen Mfg. Co., Hayward, Calif.
Lennox Industries Inc., Columbus, O.
Lennox Industries Inc., Des Moines, Ia.
Lennox Industries Inc., Marshalltown, Ia.
Mammoth Furnace Co., Minneapolis, Minn.
Maxon Premix Burner Co., Muncie, Ind.
Meyer Furnace Co., The, Peoria, Ill.
Modine Mfg. Co., Racine, Wis.

Mueller Climatrol, Div. of Worthington Corp., Milwaukee, Wis.
National Heater Co., Inc., St. Paul, Minn.
Norman Products Co., Inc., Columbus, O.
Olsen Mfg. Co., C. A., Elyria, O.
OverHead Heaters, Inc., Detroit, Mich.
Payne Company, La Puente, Calif.
Peerless Mfg. Div., Dover Corp., Louisville.
Prat-Daniel Corp., Thermobloc Div., South Norwalk, Conn.
Reznor Mfg. Co., Mercer, Pa.
St. Louis Blow Pipe & Heater Co., Div. of Young Sales Corp., St. Louis, Mo.
Sterlairco, Inc., Westfield, Mass.
Surface Combustion Corp., Toledo, O.
Tuck-Aire Furnace Co., San Francisco, Calif.
United States Air Conditioning Corp., Delaware, O.
Utility Appliance Corp., Los Angeles, Calif.
Viking Mfg. Corp., Cleveland, O.
Williamson Co., The, Cincinnati, O.
Wing Mfg. Co., L. J., Div. of Aero Supply Mfg. Co., Inc., Linden, N. J.

HEATERS, DUCT, OIL FIRED

Arkos Mfg. Co., Detroit, Mich.
Campbell Heating Co., Des Moines, Ia.
Century Engineering Corp., Cedar Rapids, Ia.
Certified Furnace Corp., Trenton, N. J.
Chicago Steel Furnace Co., Chicago, Ill.
Dravo Corp., Machinery Div., Pittsburgh, Pa.
Inland Heater Corp., Minneapolis, Minn.
Interstate Heater Mfg. Co., Denver, Colo.
Jackson & Church Co., Saginaw, Mich.
Johnson Heater Corp., Chelsea, Mass.
Kleer Kleen Mfg. Co., Hayward, Calif.
Lennox Industries Inc., Des Moines, Ia.
Mammoth Furnace Co., Minneapolis, Minn.
National Heater Co., Inc., St. Paul, Minn.
OverHead Heaters, Inc., Detroit, Mich.
Prat-Daniel Corp., Thermobloc Div., South Norwalk, Conn.
Republic Products Co., Philadelphia, Pa.
Viking Mfg. Corp., Cleveland, O.
Williamson Co., The, Cincinnati, O.

HEATERS, ELECTRIC, OIL-HEATING, FOR PREVENTING FOAMING IN CRANKCASE COMPRESSOR OIL

Electrofilm, Inc., North Hollywood, Calif.
Electro-Therm, Inc., Silver Spring, Md.
Vulcan Electric Co., Danvers, Mass.
Wiegand Co., Edwin L., Pittsburgh, Pa.

HEATERS, FEEDWATER

See Deaerators

HEATERS, GASOLINE FIRED (FOR AIRCRAFT AND PORTABLE GROUND USE)

Coleman Co., Inc., The, Wichita, Ks.
Fluid Heat Div., Anchor Post Products Inc., Baltimore, Md.
Herman Nelson Products, American Air Filter Co., Inc., Louisville, Ky.
National Heater Co., Inc., St. Paul, Minn.
Perfection Industries Div., Hupp Corp., Cleveland, O.
Stewart-Warner Corp., South Wind Div., Indianapolis, Ind.
Surface Combustion Corp., Toledo, O.

HEATERS, INDIRECT, SUBMERGED

Adsco Div., Yuba Consolidated Industries, Inc., Buffalo, N. Y.
Bell & Gossett Co., Morton Grove, Ill.
Buxton Mfg. Co., Dover, N. J.
Davis Engineering Corp., Elizabeth, N. J.
Dean Thermo-Panel Coil Div., Dean Products, Inc., Brooklyn, N. Y.
Edison Heatube Div., McGraw-Edison Co., Allegan, Mich.
General Ceramics Corp., Keasbey, N. J. (graphite)
General Fittings Co., East Greenwich, R. I.
Graham Mfg. Co., Inc., New York, N. Y.
Heat More Tankless Heater Co., Cambridge, Mass.
Killebrew Engineering Corp., St. Louis, Mo.
Lindy Heaters, Inc., New York, N. Y.
Manning & Lewis Engineering Co., Newark, N. J.
Newcomb-Detroit Co., Detroit, Mich. (gas)
Patterson-Kelley Co., Inc., The, East Stroudsburg, Pa.
Penberthy Mfg. Co., Div. of Buffalo Eclipse Corp., Detroit, Mich.
Richmond Engineering Co., Richmond, Va.
Sims Co., Erie, Pa.
Taco Heaters, Inc., Cranston, R. I.
Western Blower Co., Seattle, Wash.
Yula Corp., Bronx, N. Y.

HEATERS, OIL

See Preheaters, Fuel Oil; Units, Fuel Oil, Heating, Pumping and Straining

HEATERS, OIL TANK, SUCTION BELL

Best Combustion Equipment Co., Inc., W. N., Carlstadt, N. J.
Brown Fintube Co., Elyria, O.
Condenser Service & Engineering Co., Inc., Hoboken, N. J.
Davis Engineering Corp., Elizabeth, N. J.
Hauck Mfg. Co., Brooklyn, N. Y.
Hynes Electric Heating Div., Turbine Equipment Co., Westfield, N. J.
Manning & Lewis Engineering Co., Newark, N. J.
Old Dominion Iron & Steel Corp., Richmond, Va.
Richmond Engineering Co., Inc., Richmond, Va.
Yuba Mfg. Div., Yuba Consolidated Industries, Inc., Benicia, Calif.
Yula Corp., Bronx, N. Y.

HEATERS, RADIATION, FOR SUPPLYING HOT WATER RADIATION FROM STEAM BOILER

Acme Welding, Div. of the United Tool & Die Co., West Hartford, Conn.
Alstrom Corp., New York, N. Y.
Bell & Gossett Co., Morton Grove, Ill.
Killebrew Engineering Corp., St. Louis, Mo.
Lindy Heaters, Inc., New York, N. Y.
Mar-Coil Heater Co., Union City, N. J.
Taco Heaters, Inc., Cranston, R. I.
Thrush & Co., H. A., Peru, Ind.
Viking Mfg. Corp., Cleveland, O.
Yula Corp., Bronx, N. Y.

HEATERS, STEAM JET, FOR LIQUIDS

Condenser Service & Engineering Co., Inc., Hoboken, N. J.
Croll-Reynolds Engineering Co., Inc., New York, N. Y.
Duriron Co., Inc., The, Dayton, O.
Heil Process Equipment Corp., Cleveland, O.
National Carbon Co., Div. of Union Carbide Corp., New York, N. Y.
O'Brien Steam Specialty Co., Inc., Syracuse, N. Y. (steam-diffusers)
Penberthy Mfg. Co., Div. of Buffalo Eclipse Corp., Detroit, Mich.
Schutte and Koerting Co., Cornwells Heights, Bucks County, Pa.
Sims Co., Erie, Pa.
Sims Pump Valve Co., Hoboken, N. J.
Vic Mfg. Co., Minneapolis, Minn.

HEATERS, STRIP AND IMMERSION, ELECTRIC

Acme Electric Heating Co., Boston, Mass.
American Instrument Co., Inc., Silver Spring, Md.
Consolidated Metal Products Corp., Albany, N. Y.
Cutler-Hammer, Inc., Milwaukee, Wis.
Edison Heatube Div., McGraw-Edison Co., Allegan, Mich.
Electro-Therm, Inc., Silver Spring, Md.
Falcon Equipment Co., New Brighton, Pa.
General Electric Co., Apparatus Sales Div., Schenectady, N. Y.
Heil Process Equipment Corp., Cleveland, O.
Hynes Electric Heating Div., Turbine Equipment Co., Westfield, N. J.
Industrial Engineering & Equipment Co., St. Louis, Mo.
Red Spot Electric Co., Tacoma, Wash.
S&C Mfg. Co., Cincinnati, O.
Syntron Co., Homer City, Pa.
Trent Inc., Philadelphia, Pa.
Tuttle Electric Products, Inc., Kirkland, Ill. (electric heating elements for room air conditioners)
Vulcan Electric Co., Danvers, Mass.
Waage Electric, Inc., Kenilworth, N. J.
Wesix Electric Heater Co., San Francisco.
Wiegand Co., Edwin L., Pittsburgh, Pa.

HEATERS, SUSPENDED, RADIANT, ELECTRIC

Ampere Industries, Newark, N. J.
Berko Electric Mfg. Co., Queens Village, N. Y.
Corning Glass Works, Corning, N. Y.
Edison Heatube Div., McGraw-Edison Co., Allegan, Mich.
Electromode Div. of Commercial Controls Corp., Rochester, N. Y.
Heatmore, Inc., Brooklyn, N. Y.
Ilg Electric Ventilating Co., Chicago, Ill.
LaSalle Products, Inc., Buffalo, N. Y.
S&C Mfg. Co., Cincinnati, O.
Thermador Electrical Mfg., Los Angeles, Calif.
ThermoRay Corp., Newark, N. J.
Trent, Inc., Philadelphia, Pa.
Union Chill Mat Co., Pittsburgh, Pa.
Vulcan Electric Co., Danvers, Mass.
Wesix Electric Heater Co., San Francisco, Calif.
Wiegand Co., Edwin L., Pittsburgh, Pa.

HEATERS, SUSPENDED, RADIANT, GAS FIRED

Ilg Electric Ventilating Co., Chicago, Ill.
Perfection Industries Div., Hupp Corp., Cleveland, O.
Prat-Daniel Corp., Thermobloc Div., South Norwalk, Conn.
Union Chill Mat Co., Pittsburgh, Pa.

HEATERS, UNIT, ELECTRIC HEATING ELEMENT

Acme Electric Heating Co., Boston, Mass.
Ceilheat, Inc., Knoxville, Tenn.
Circle-Air Industries, Inc., Brooklyn, N. Y.
Cutler-Hammer, Inc., Milwaukee, Wis.
Edison Heatube Div., McGraw-Edison Co., Allegan, Mich.
Electrofilm, Inc., North Hollywood, Calif.
Electromode Div. of Commercial Controls Corp., Rochester, N. Y.
Electro-Therm, Inc., Silver Spring, Md.
Everwarm, Inc., Knoxville, Tenn.
Fresh'nd-Aire Co., Div. of Cory Corp., Chicago, Ill.
General Electric Co., Apparatus Sales Div., Schenectady, N. Y.
Heatmore, Inc., Brooklyn, N. Y.
Hynes Electric Heating Div., Turbine Equipment Co., Westfield, N. J.
Kilbury Mfg. Co., Inc., Lawndale, Calif.
LaSalle Products, Inc., Buffalo, N. Y.
Lintern Corp., Painesville, O.
Marviray, Inc., Newark, N. J.
Modernheat Cable Corp., Kingsport, Tenn.
Nesbitt, Inc., John J., Philadelphia, Pa.
Sunwarm, Inc., Kingsport, Tenn.
Thermador Electrical Mfg., Los Angeles.
Trent Inc., Philadelphia, Pa.
Vulcan Electric Co., Danvers, Mass.
Wesix Electric Heater Co., San Francisco.
Wiegand Co., Edwin L., Pittsburgh, Pa.
Wing Mfg. Co., L. J., Div. of Aero Supply Mfg. Co., Inc., Linden, N. J.

HEATERS, UNIT, ELECTRIC HEATING ELEMENT, EXPLOSION PROOF

Edison Heatube Div., McGraw-Edison Co., Allegan, Mich.
Electromode Div. of Commercial Controls Corp., Rochester, N. Y.
Electro-Therm, Inc., Silver Spring, Md.
Ilg Electric Ventilating Co., Chicago, Ill.
Nesbitt, Inc., John J., Philadelphia, Pa.
Trent, Inc., Philadelphia, Pa.
Vulcan Electric Co., Danvers, Mass.
Wesix Electric Heater Co., San Francisco, Calif.
Wiegand Co., Edwin L., Pittsburgh, Pa.

HEATERS, UNIT, GAS, PROPELLER FAN TYPE

Airtherm Mfg. Co., St. Louis, Mo.
American Blower Div. of American Standard, Detroit, Mich.
American Furnace Co., St. Louis, Mo.
Barwick Mfg. Corp., Wichita, Kan.
Bryant Mfg. Co., Indianapolis, Ind.
Burnham Corp., Irvington, N. Y.

Carrier Corp., Syracuse, N. Y.
Clow & Sons, Inc., James B., Chicago, Ill.
Crane Co., Chicago, Ill.
Day & Night Mfg. Co., La Puente, Calif.
Dravo Corp., Machinery Div., Pittsburgh, Pa.
General Gas Light Co., Kalamazoo, Mich.
Grinnell Co., Inc., Providence, R. I.
Hastings Air Control, Inc., Omaha, Nebr.
Henry Furnace Co., The, Medina, O.
Ilg Electric Ventilating Co., Chicago, Ill.
Jackson & Church Co., Saginaw, Mich.
Janitrol Heating & Air Conditioning Div., Surface Combustion Corp., Columbus, O.
Kisco Boiler & Engineering Co., St. Louis, Mo.
Lennox Industries Inc., Des Moines, Ia.
Mission Appliance Corp., Hawthorne, Calif.
Modine Mfg. Co., Racine, Wis.
Mueller Climatrol, Div. of Worthington Corp., Milwaukee, Wis.
National-U. S. Radiator Corp., Johnstown, Pa.
Nesbitt, Inc., John J., Philadelphia, Pa.
Norman Products Co., Inc., Columbus, O.
Ohio Foundry & Mfg. Co., Steubenville, O.
Olsen Mfg. Co., C. A., Elyria, O.
Payne Company, La Puente, Calif.
Peerless Mfg. Div., Dover Corp., Louisville, Ky.
Pioneer Mfg. Co., Los Angeles, Calif.
Reznor Mfg. Co., Mercer, Pa.
Roberts-Gordon Appliance Corp., Buffalo, N. Y.
Sterlairco, Inc., Westfield, Mass.
Surface Combustion Corp., Toledo, O.
Temco, Inc., Nashville, Tenn.
Trane Co., The, La Crosse, Wis.
Tuck-Aire Furnace Co., San Francisco, Calif.
United States Air Conditioning Corp., Delaware, O.
Utility Appliance Corp., Los Angeles, Calif.
Vacuum Gas Burner Co., Olean, N. Y.
Webster & Co., Warren, Camden, N. J.
Westinghouse Electric Corp., Sturtevant Div., Boston, Mass.
Wing Mfg. Co., L. J., Div. of Aero Supply Mfg. Co., Inc., Linden, N. J.
Worthington Corp., East Orange, N. J.
Young Radiator Co., Racine, Wis.
Zink Co., John, Tulsa, Okla.

HEATERS, UNIT, OIL, PROPELLER FAN TYPE

Interstate Heater Mfg. Co., Denver, Colo.
Sterlairco, Inc., Westfield, Mass.

HEATERS, UNIT, STEAM AND HOT WATER, CABINET TYPE

Air Conditioning Engineering Co., Cambridge, Mass.
Airtherm Mfg. Co., St. Louis, Mo.
American Blower Div. of American-Standard, Detroit, Mich.
Buffalo Forge Co., Buffalo, N. Y.
Carrier Corp., Syracuse, N. Y.
Clarage Fan Co., Kalamazoo, Mich.
Dunham-Bush, Inc., West Hartford, Conn.
Fedders-Quigan Corp., Heating Div., Trenton, N. J.
Herman Nelson Products, American Air Filter Co., Inc., Louisville, Ky.
Ilg Electric Ventilating Co., Chicago, Ill.
Kritzer Radiant Coils, Inc., Batavia, Ill.
Marlo Coil Co., St. Louis, Mo.
McQuay, Inc., Minneapolis, Minn.
Modine Mfg. Co., Racine, Wis.
Nesbitt, Inc., John J., Philadelphia, Pa.
Niagara Blower Co., New York, N. Y.
Recold Corp., Los Angeles, Calif.
Rittling Corp., The, Buffalo, N. Y.
Trane Co., The, La Crosse, Wis.
Webster & Co., Warren, Camden, N. J.
Western Blower Co., Seattle, Wash.
Westinghouse Electric Corp., Sturtevant Div., Boston, Mass.
Young Radiator Corp., Racine, Wis.

HEATERS, UNIT, STEAM AND HOT WATER, CENTRIFUGAL FAN TYPE

Air Conditioning Engineering Co., Cambridge, Mass.
Airtherm Mfg. Co., St. Louis, Mo.
American Blower Div. of American-Standard, Detroit, Mich.
Blazer & Son, M., Passiac, N. J.
Buffalo Forge Co., Buffalo, N. Y.
Carrier Corp., Syracuse, N. Y.
Clarage Fan Co., Kalamazoo, Mich.
Drayer-Hanson, Div. of National-U.S. Radiator Corp., Los Angeles, Calif.
Dunham-Bush, Inc., West Hartford, Conn.
Herman Nelson Products, American Air Filter Co., Inc., Louisville, Ky.
Kennard Products, American Air Filter Co., Inc., Louisville, Ky.
Marlo Coil Co., St. Louis, Mo.
McQuay, Inc., Minneapolis, Minn.
Modine Mfg. Co., Racine, Wis.
Nesbitt, Inc., John J., Philadelphia, Pa.
New York Blower Co., Chicago, Ill.
Niagara Blower Co., New York, N. Y.
Recold Corp., Los Angeles, Calif.
St. Louis Blow Pipe & Heater Co., Div. of Young Sales Corp., St. Louis, Mo.
Thermal Engineering Corp., Houston, Tex.
Trane Co., The, La Crosse, Wis.
Webster & Co., Warren, Camden, N. J.
Western Blower Co., Seattle, Wash.
Westinghouse Electric Corp., Sturtevant Div., Boston, Mass.
Wilson Engineering Corp., Chicago, Ill.
Young Radiator Co., Racine, Wis.

HEATERS, UNIT, STEAM AND HOT WATER, PROPELLER FAN TYPE, HORIZONTAL BLOW

Airtherm Mfg. Co., St. Louis, Mo.
American Blower Div. of American-Standard, Detroit, Mich.
Beacon-Morris Corp., Boston, Mass.
Buffalo Forge Co., Buffalo, N. Y.
Burnham Corp., Irvington, N. Y.
Carrier Corp., Syracuse, N. Y.
Clarage Fan Co., Kalamazoo, Mich.
Crane Co., Chicago, Ill.
Dunham-Bush, Inc., West Hartford, Conn.
Fedders-Quigan Corp., Heating Div., Trenton, N. J.
Grinnell Co., Inc., Providence, R. I.
Hartzell Propeller Fan Co., Piqua, O.
Herman Nelson Products, American Air Filter Co., Inc., Louisville, Ky.
Ilg Electric Ventilating Co., Chicago, Ill.
King Co. of Owatonna, The, Owatonna, Minn.
Kisco Boiler & Engineering Co., St. Louis, Mo.
Kritzer Radiant Coils, Inc., Batavia, Ill.
McCord Corp., Detroit, Mich.
McQuay, Inc., Minneapolis, Minn.
Merchant & Evans Co., Philadelphia, Pa.
Modine Mfg. Co., Racine, Wis.
Muckle Mfg. Co., Owatonna, Minn.
Murray Mfg. Co., D. J., Wausau, Wis.
National-U. S. Radiator Corp., Johnstown, Pa.
Nesbitt, Inc., John J., Philadelphia, Pa.
New York Blower Co., Chicago, Ill.
Rittling Corp., The, Buffalo, N. Y.
St. Louis Blow Pipe & Heater Co., Div. of Young Sales Corp., St. Louis, Mo.
Trane Co., The, La Crosse, Wis.
Webster & Co., Warren, Camden, N. J.
Western Blower Co., Seattle, Wash.
Westinghouse Electric Corp., Sturtevant Div., Boston, Mass.
Wilson Engineering Corp., Chicago, Ill.
Wing Mfg. Co., L. J., Div. of Aero Supply Mfg. Co., Inc., Linden, N. J.
Young Radiator Co., Racine, Wis.

HEATERS, UNIT, STEAM AND HOT WATER, PROPELLER FAN TYPE, VERTICAL BLOW

Airtherm Mfg. Co., St. Louis, Mo.
American Blower Div. of American-Standard, Detroit, Mich.
Beacon-Morris Corp., Boston, Mass.
Buffalo Forge Co., Buffalo, N. Y.
Burnham Corp., Irvington, N. Y.
Carrier Corp., Syracuse, N. Y.
Clarage Fan Co., Kalamazoo, Mich.
Crane Co., Chicago, Ill.
Dunham-Bush, Inc., West Hartford, Conn.
Fedders-Quigan Corp., Heating Div., Trenton, N. J.
Gallaher Co., The, Omaha, Neb.
Grinnell Co., Inc., Providence, R. I.
Herman Nelson Products, American Air Filter Co., Inc., Louisville, Ky.
Ilg Electric Ventilating Co., Chicago, Ill.
Kritzer Radiant Coils, Inc., Batavia, Ill.
McCord Corp., Detroit, Mich.
McQuay, Inc., Minneapolis, Minn.
Modine Mfg. Co., Racine, Wis.
Murray Mfg. Co., D. J., Wausau, Wis.
National-U. S. Radiator Corp., Johnstown, Pa.
Nesbitt, Inc., John J., Philadelphia, Pa.
New York Blower Co., Chicago, Ill.
Niagara Blower Co., New York, N. Y.
Rittling Corp., The, Buffalo, N. Y.
Trane Co., The, La Crosse, Wis.
Webster & Co., Warren, Camden, N. J.
Western Blower Co., Seattle, Wash.
Westinghouse Electric Corp., Sturtevant Div., Boston, Mass.
Wing Mfg. Co., L. J., Div. of Aero Supply Mfg. Co., Inc., Linden, N. J. (Revolving)
Young Radiator Co., Racine, Wis.

HEATERS, VENTILATION

See Ventilators, Roof, Fan; Ventilators, Unit; Surface, Finned, Heating

HEATERS, WALL, CIRCULATING, ELECTRIC

Broan Mfg. Co., Inc., Hartford, Wis.
Ceilheat, Inc., Knoxville, Tenn.
Circle-Air Industries, Inc., Brooklyn, N. Y.
Electrend Products Corp., St. Joseph, Mich.
Electric Heating & Cooling, Inc., Newark, N. J.
General Electric Co., Wiring Device Dept., Providence, R. I.
Hunter Div., Robbins & Myers, Inc., Memphis, Tenn.
Ilg Electric Ventilating Co., Chicago, Ill.
LaSalle Products, Inc., Buffalo, N. Y.
Modernheat Cable Corp., Kingsport, Tenn.
Sunwarm, Inc., Kingsport, Tenn.
Thermador Electrical Mfg., Los Angeles, Calif.
ThermoRay Corp., Newark, N. J.
Trade-Wind Motorfans, Inc., Pico Rivera, Calif. (wall insert type)
Wesix Electric Heater Co., San Francisco, Calif.
Wiegand Co., Edwin L. Pittsburgh, Pa.

HEATERS, WALL, CIRCULATING, GAS FIRED

Advance Furnace Co., Wichita, Kans.
Coleman Co., Inc., The, Wichita, Kan.
Day & Night Mfg. Co., La Puente, Calif.
Dearborn Stove Co., Dallas, Tex.
General Gas Light Co., Kalamazoo, Mich.
Kilbury Mfg. Co., Inc., Lawndale, Calif.
Kresky Mfg. Co., Inc., Petaluma, Calif.
Lennox Industries Inc., Marshalltown, Ia.
Mission Appliance Corp., Hawthorne, Calif.
Ohio Foundry & Mfg. Co., Steubenville, O.
Payne Company, La Puente, Calif.
Peerless Mfg. Div., Dover Corp., Pittsburgh.
Pioneer Mfg. Co., Los Angeles, Calif.
Stewart-Warner Corp., Heating & Air Conditioning Div., Lebanon, Ind.
Stewart-Warner Corp., South Wind Div., Indianapolis, Ind.
Temco, Inc., Nashville, Tenn.
Westinghouse Electric Corp., Sturtevant Div., Boston, Mass.
Zink Co., John, Tulsa, Okla.

HEATERS, WALL, CIRCULATING, OIL FIRED

Consumer Products, Motor Wheel Corp., Lansing, Mich.
Kleer Kleen Mfg. Co., Hayward, Calif.
Kresky Mfg. Co., Petaluma, Calif.
Scaife Co., Oakmont, Pa.
Stewart-Warner Corp., Heating & Air Conditioning Div., Lebanon, Ind.

HEATERS, WATER, AIR-TANKLESS

Tankless Water Heater and Compression Tank Combined

American Tube Products, Inc., West Warwick, R. I.
Bell & Gossett Co., Morton Grove, Ill.
Edwards Engineering Corp., Pompton Plains, N. J.
General Fittings Co., East Greenwich, R. I.
Lewis & Saunders, Lakeport, N. H.
Mar-Coil Heater Co., Union City, N. J.
Old Dominion Iron & Steel Corp., Richmond, Va.

HEATERS, WATER, CAST IRON, COAL FIRED

Adams Co., The, Dubuque, Ia.
Burnham Corp., Irvington, N. Y.
National-U. S. Radiator Corp., Johnstown, Pa.
Peerless Heater Co., The, Div. of The Eastern Foundry Co., Boyertown, Pa.

Prox Co., Inc., Frank, Terre Haute, Ind.
Smith Co., Inc., H. B., The, Westfield, Mass.
Weil-McLain Co., Michigan City, Ind.

HEATERS, WATER, ELECTRIC

Allcraft Mfg. Co., Inc., Cambridge, Mass.
American Radiator & Standard Sanitary Corp., Plumbing & Heating Div., New York, N. Y.
Auburn Burner Co., Auburn, Ind.
Bastian-Morley Co., Inc., LaPorte, Ind.
Can Arm Corp., Champlain, N. Y.
Clayton & Lambert Mfg. Co., Louisville, Ky.
Cleveland Heater Co., Cleveland, O.
Consumer Products, Motor Wheel Corp., Lansing, Mich.
Crane Co., Chicago, Ill.
Custom Engineering Co., Los Angeles, Calif.
Cutler-Hammer, Inc., Milwaukee, Wis.
Edison Heatube Div., McGraw-Edison Co., Allegan, Mich.
Electro-Therm, Inc., Silver Spring, Md.
Frigidaire Div., General Motors Corp., Dayton, O.
Heat-X, Inc., Subsidiary of Dunham-Bush, Inc., West Hartford, Conn.
Hotpoint Co., Chicago, Ill.
Hotstream Heater Co., Cleveland, O.
Hynes Electric Heating Div., Turbine Equipment Co., Westfield, N. J.
Industrial Engineering & Equipment Co., St. Louis, Mo.
Koven & Bro. Inc., L. O., Jersey City, N. J.
McGraw-Edison Co., Clark Div. & Tropic-Aire Div., Chicago, Ill.
Mission Appliance Corp., Hawthorne, Calif.
Modern Div., George Getz Corp., Freeport, Ill.
Mor-Flo Heater Corp., Cleveland, O.
National-U. S. Radiator Corp., Johnstown, Pa.
Pioneer Mfg. Co., Los Angeles, Calif.
Precision Parts Corp., Nashville, Tenn.
Red Spot Electric Co., Tacoma, Wash.
Rheem Mfg. Co., Chicago, Ill.
Smith Corp., A. O., Permaglas Div., Kankakee, Ill.
Thermador Electric Mfg., Los Angeles, Calif.
Viking Mfg. Corp., Cleveland, O.
Vulcan Electric Co., Danvers, Mass.
Wesix Electric Heater Co., San Francisco, Calif.
Wiegand Co., Edwin L., Pittsburgh, Pa.
Wood Co., John, Conshohocken, Pa.
York-Shipley, Inc., York, Pa.

HEATERS, WATER, GAS FIRED

Ajax Boiler & Heater Co., Gardena, Calif.
Aldrich Co., Wyoming, Ill.
Allcraft Mfg. Co., Inc., Cambridge, Mass.
American Radiator & Standard Sanitary Corp., Plumbing & Heating Div., New York, N. Y.
Auburn Burner Co., Auburn, Ind.
Bastian-Morley Co., Inc., LaPorte, Ind.
Bica Co., Girard, O.
Bock Corp., Madison, Wis.
Brown Products Corp., Union, N. J.
Bryan Steam Corp., Peru, Ind.
Bryant Mfg. Co., Indianapolis, Ind.
Clayton & Lambert Mfg. Co., Louisville, Ky.
Cleveland Heater Co., Cleveland, O.
Consumer Products, Motor Wheel Corp., Lansing, Mich.
Crane Co., Chicago, Ill.
Day & Night Mfg. Co., La Puente, Calif.
Delco Appliance Div., General Motors Corp., Rochester, N. Y.
Eclipse Fuel Engineering Co., Rockford, Ill.
Edgewood Mfg. Co., Inc., El Monte, Calif.
Edwards Engineering Corp., Pompton Plains, N. J.
Equipco, Inc., Portland, Ore.
Everhot Heater Div., Temprite Products, Detroit, Mich.
Hotstream Heater Co., Cleveland, O.
Hydrotherm, Inc., Northvale, N. J.
Kehm Corp., The, Chicago, Ill.
Koven & Bro. Inc., L. O., Jersey City, N. J.
Laars Engineers, North Hollywood, Calif.
McGraw-Edison Co., Clark Div & Tropic-Aire Div., Chicago, Ill.
Mission Appliance Corp., Hawthorne, Calif.
Montgomery Bros., San Francisco, Calif.
Mor-Flo Heater Corp., Cleveland, O.
Mt. Hawley Mfg. Co., Inc., Peoria, Ill.
National-U. S. Radiator Corp., Johnstown, Pa.
Pacific Steel Boiler Div., National-U. S. Radiator Corp., Johnstown, Pa.
Parker Boiler Mfg. Co., Sid E., Los Angeles, Calif.
Penn Boiler & Burner Mfg. Corp., Lancaster, Pa.
Pioneer Mfg. Co., Los Angeles, Calif.
Radiant Heat and Cooling Co., Santa Clara, Calif.
Radiant Utilities Corp., Brooklyn, N. Y.
Ray Oil Burner Co., San Francisco, Calif.
Raypak Co., Inc., Los Angeles, Calif.
Rheem Mfg. Co., Chicago, Ill.
Rite Engineering & Mfg. Corp., Downey, Calif.
Ruud Mfg. Co., Kalamazoo, Mich.
Smith Corp., A. O., Permaglas Div., Kankakee, Ill.
Schoedinger, Inc., F. O., Columbus, O.
Sellers Engineering Co., Chicago, Ill.
Smith Co., Inc., H. B., The, Westfield, Mass.
Stout & Sons, David, St. Louis, Mo.
Trageser Copper Works, Inc., Jamaica, N. Y.
Viking Mfg. Corp., Cleveland, O.
Western Boiler Co., Los Angeles, Calif.
Wood Co., John, Conshohocken, Pa.
York-Shipley, Inc., York, Pa.

HEATERS, WATER, INDIRECT

Adsco Div., Yuba Consolidated Industries, Inc., Buffalo, N. Y.
Ajax Boiler & Heater Co., Gardena, Calif.
Alstrom Corp., New York, N. Y.
American Radiator & Standard Sanitary Corp., Plumbing & Heating Div., New York, N. Y.
American Tube Products, Inc., West Warwick, R. I.
Bell & Gossett Co., Morton Grove, Ill.
Bernstrom, Inc., C. R., Providence, R. I.
Birchfield Boiler, Inc., Tacoma, Wash.
Bryant Mfg. Co., Indianapolis, Ind.
Davis Engineering Corp., Elizabeth, N. J.
Dean Thermo-Panel Coil Div., Dean Products, Inc., Brooklyn, N. Y.
Doyle & Roth Mfg. Co., Inc., Brooklyn.
Ellicott Fabricators, Inc., Baltimore, Md.
General Fittings Co., East Greenwich, R. I.
Graham Mfg. Co., Inc., New York, N. Y.
Harrison Sheet Steel Co., Chicago, Ill.
Kehm Corp., The, Chicago, Ill.
Killebrew Engineering Corp., St. Louis, Mo.
Lewis & Saunders, Lakeport, N. H.
Lindy Heaters, Inc., New York, N. Y.
Malsbary Mfg. Co., Oakland, Calif.
Manning & Lewis Engineering Co., Newark, N. J.
National-U. S. Radiator Corp., Johnstown, Pa.
Patterson-Kelley Co., Inc., The, East Stroudsburg, Pa.
Penberthy Mfg. Co., Div. of Buffalo Eclipse Corp., Detroit, Mich.
Penn Boiler & Burner Mfg. Corp., Lancaster, Pa.
Portmar Boiler Co., Inc., Brooklyn, N. Y.
Rite Engineering & Mfg. Corp., Downey, Calif.
Sellers Engineering Co., Chicago, Ill.
Sims Co., Erie, Pa.
Taco Heaters, Inc., Cranston, R. I.
Thrush & Co., H. A., Peru, Ind.
Weil-McLain Co., Michigan City, Ind.
Western Blower Co., Seattle, Wash.
Whitlock Mfg. Co., W. Hartford, Conn.
Yula Corp., Bronx, N. Y.

HEATERS, WATER, INDIRECT, COMBINATION TANK AND TANKLESS

Adsco Div., Yuba Consolidated Industries, Inc., Buffalo, N. Y.
Alstrom Corp., New York, N. Y.
American Tube Products, Inc., West Warwick, R. I.
Bell & Gossett Co., Morton Grove, Ill.
Birchfield Boiler, Inc., Tacoma, Wash.
Bros, Inc., Minneapolis, Minn.
Buxton Mfg. Co., Dover, N. J.
Carpenter Heating & Air Conditioning Co., Cleveland, O.
Crotty Mfg. Corp., Flushing, Long Island, N. Y.
Davis Engineering Corp., Elizabeth, N. J.
Doyle & Roth Mfg. Co., Inc., Brooklyn, N. Y.
Eclipse Fuel Engineering Co., Rockford, Ill.
Edwards Engineering Corp., Pompton Plains, N. J.
Ellicott Fabricators, Inc., Baltimore, Md.
General Ceramics Corp., Keasbey, N. J. (graphite)
General Fittings Co., East Greenwich, R. I.
Hydrotherm, Inc., Northvale, N. J.
Killebrew Engineering Corp., St. Louis, Mo.
Lindy Heaters, Inc., New York, N. Y.
Manning & Lewis Engineering Co., Newark, N. J.
Portmar Boiler Co., Inc., Brooklyn, N. Y.
Richmond Engineering Co., Richmond, Va.
Sims Co., Erie, Pa.
Taco Heaters, Inc., Cranston, R. I.
Weil-McLain Co., Michigan City, Ind.
Western Blower Co., Seattle, Wash.
Whitlock Mfg. Co., W. Hartford, Conn.
Yula Corp., Bronx, N. Y.

HEATERS, WATER, OIL FIRED

Aeroil Products Co., Inc., South Hackensack, N. J.
Ajax Boiler & Heater Co., Gardena, Calif.
Aldrich Co., Wyoming, Ill.
Auburn Burner Co., Auburn, Ind.
Bock Corp., Madison, Wis.
Brown Products Corp., Union, N. J.
Bryan Steam Corp., Peru, Ind.
Burnham Corp., Irvington, N. Y.
Century Engineering Corp., Cedar Rapids, Ia.
Consumer Products, Motor Wheel Corp., Lansing, Mich.
Edwards Engineering Corp., Pompton Plains, N. J.
Electrol Burner Mfg. Co., Inc., Rutherford, N. J.
Hotstream Heater Co., Cleveland, O.
Johnson Co., S. T., Oakland, Calif.
Koven & Bro. Inc., L. O., Jersey City, N. J.
Mt. Hawley Mfg. Co., Inc., Peoria, Ill.
National-U. S. Radiator Corp., Johnstown, Pa.
Pacific Steel Boiler Div., National-U. S. Radiator Corp., Johnstown, Pa.
Parker Boiler Mfg. Co., Sid E., Los Angeles, Calif.
Penn Boiler & Burner Mfg. Corp., Lancaster, Pa.
Petro, Cleveland, O.
Portmar Boiler Co., Inc., Brooklyn, N. Y.
Preferred Utilities Mfg. Corp., New York.
Quiet Automatic Oil Burner Corp., Newark, N. J.
Radiant Utilities Corp., Brooklyn, N. Y.
Ray Oil Burner Co., San Francisco, Calif.
Reif-Rexoil, Inc., Buffalo, N. Y.
Rheem Mfg. Co., Chicago, Ill.
Rite Engineering & Mfg. Corp., Downey, Calif.
Smith Co., Inc., H. B., The, Westfield, Mass.
Vapor Heating Corp., Chicago, Ill.
Viking Mfg. Corp., Cleveland, O.
Way-Wolff Associates, Inc., Long Island City, N. Y.
Western Boiler Co., Los Angeles, Calif.
Wood Co., John, Conshohocken, Pa.

HEATERS, WATER, STEAM, INSTANTANEOUS

Adsco Div., Yuba Consolidated Industries, Inc., Buffalo, N. Y.
Aerco Corp., Northvale, N. J.
Alco Products, Inc., Schenectady, N. Y.
Alstrom Corp., New York, N. Y.
American-Standard, Ross Heat Exchanger Div., Buffalo, N. Y.
American Tube Products, Inc., West Warwick, R. I.
Bell & Gossett Co., Morton Grove, Ill.
Bernstrom, Inc., C. R., Providence, R. I.
Buxton Mfg. Co., Dover, N. J.
Coe Mfg. Co., Painesville, O. (safety water heater)
Condenser Service & Engineering Co., Inc., Hoboken, N. J.
Cooley Co., E. C., San Francisco, Calif.
Croll-Reynolds Engineering Co., Inc., New York, N. Y.
Davis Engineering Corp., Elizabeth, N. J.
Doyle & Roth Mfg. Co., Inc., Brooklyn, N. Y.
Eclipse Fuel Engineering Co., Rockford, Ill.
Ellicott Fabricators, Inc., Baltimore, Md.
General Fittings Co., East Greenwich, R. I.
Graham Mfg. Co., Inc., New York, N. Y.
Heat More Tankless Heater Co., Cambridge, Mass.
Johnson Corp., The, Three Rivers, Mich.
Kewanee Boiler Div., American-Standard, Kewanee, Ill.
Killebrew Engineering Corp., St. Louis, Mo.
Koven & Bro. Inc., L. O., Jersey City, N. J.
Lewis & Saunders, Lakeport, N. H.
Lindy Heaters, Inc., New York, N. Y.
Manning & Lewis Engineering Co., Newark, N. J.

Marion Machine Foundry, Inc., Marion, Ind.
Montgomery Bros., San Francisco, Calif.
National Pipe Bending Co., New Haven, Conn.
O'Brien Steam Specialty Co., Inc., Syracuse, N. Y.
Pacific Steel Boiler Div., National U.S. Radiator Corp., Johnstown, Pa.
Patterson-Kelley Co., Inc., The, East Stroudsburg, Pa.
Penberthy Mfg. Co., Div. of Buffalo Eclipse Corp., Detroit, Mich.
Pick Mfg. Co., West Bend, Wis. (direct steam injection)
Portmar Boiler Co., Inc., Brooklyn, N. Y.
Radiant Utilities Corp., Brooklyn, N. Y.
Richmond Engineering Co., Richmond, Va.
Schutte and Koerting Co., Cornwells Heights, Bucks County, Pa.
Screw Machine Products Co., Portland, Ore.
Sims Co., Erie, Pa.
Sirod Corp., Milwaukee, Wis.
Taco Heaters, Inc., Cranston, R. I.
Viking Mfg. Corp., Cleveland, O.
Whitlock Mfg. Co., W. Hartford, Conn.
Yula Corp., Bronx, N. Y.

HEATERS, WATER, STEAM, STORAGE

Adsco Div., Yuba Consolidated Industries, Inc., Buffalo, N. Y.
Aerco Corp., Northvale, N. J.
Alco Products, Inc., Schenectady, N. Y.
Alstrom Corp., New York, N. Y.
Bell & Gossett Co., Morton Grove, Ill.
Birchfield Boiler, Inc., Tacoma, Wash.
Bros, Inc., Minneapolis, Minn.
Condenser Service & Engineering Co., Inc., Hoboken, N. J.
Davis Engineering Corp., Elizabeth, N. J.
Ellicott Fabricators, Inc., Baltimore, Md.
General Fittings Co., East Greenwich, R. I.
Heat More Tankless Heater Co., Cambridge, Mass.
Johnson Corp., The, Three Rivers, Mich.
Kam Products Corp., Brooklyn, N. Y.
Kewanee Boiler Div., American-Standard, Kewanee, Ill.
Killebrew Engineering Corp., St. Louis, Mo.
Koven & Bro. Inc., L. O., Jersey City, N. J.
Lindy Heaters, Inc., New York, N. Y.
Lucey Boiler & Mfg. Corp., Chattanooga, Tenn.
Manitowoc Shipbuilding, Inc., Manitowoc, Wis.
Marion Machine Foundry, Inc., Marion, Ind.
National Pipe Bending Co., New Haven, Conn.
Old Dominion Iron & Steel Corp., Richmond, Va.
Pacific Steel Boiler Div., National U.S. Radiator Corp., Johnstown, Pa.
Parker Boiler Mfg. Co., Sid E., Los Angeles, Calif.
Patterson-Kelley Co., Inc., The, East Stroudsburg, Pa.
Penberthy Mfg. Co., Div. of Buffalo Eclipse Corp., Detroit, Mich.
Process Engineering, Inc., Methuen, Mass.
Quaker City Iron Works, Philadelphia, Pa.
Richmond Engineering Co., Richmond, Va.
Schaub Engineering Co., Fred H., Chicago.
Sims Co., Erie, Pa.
Stout & Sons, David, St. Louis, Mo.
Taco Heaters, Inc., Cranston, R. I.
Terre Haute Boiler Works Co., Terre Haute, Ind.
Tranter Mfg. Inc., Lansing, Mich.
Viking Mfg. Corp., Cleveland, O.
Vogt Machine Co., Henry, Louisville, Ky.
Western Blower Co., Seattle, Wash.
Whitlock Mfg. Co., W. Hartford, Conn.
Yula Corp., Bronx, N. Y.

HEATERS, WATER, STEEL, COAL FIRED

Finnigan & Co., Inc., J. J., Atlanta, Ga.
Johnston Bros., Inc., Ferrysburg, Mich.
Kewanee Boiler Div., American-Standard, Kewanee, Ill.
Pacific Steel Boiler Div., National-U. S. Radiator Corp., Johnstown, Pa.
Terre Haute Boiler Works Co., Terre Haute, Ind.

HEATING BOILERS

See Boilers, Heating

HEATING COILS

See Surface, Finned, Heating

HEATING SURFACE

See Surface, Finned, Heating

HEATING AND VENTILATING UNITS

See Units, Heating and Ventilating, Horizontal Package Type

HIGH VELOCITY AIR SYSTEM PIPE

See Ducts, Spiral Welded

HIGH VELOCITY MIXING UNITS, SOUND AND VOLUME CONTROL, FOR AIR CONDITIONING SYSTEMS

See Units, Mixing, Sound and Volume Control, for Double Duct High Velocity Air Conditioning Systems

HOISTS, PORTABLE, FOR INSTALLING HEATING, PIPING AND AIR CONDITIONING EQUIPMENT

Aluminum Products, Inc., Fort Lauderdale, Fla.
Broad Crane & Engineering Service Co., Detroit, Mich.
Burtchaell Heating Co., Portland, Ore.
Chicago Pneumatic Tool Co., New York, N. Y.
Chisholm-Moore Hoist Div., Columbus McKinnon Chain Corp., Tonawanda, N. Y.
Clipper Mfg. Co., Kansas City, Mo.
Coffing Hoist Div., Duff-Norton Co., Danville, Ill.
CraneVeyor Corp., Los Angeles, Calif.
Detroit Hoist & Machine Co., Detroit, Mich.
Gardner-Denver Co., Quincy, Ill.
Griphoist, Inc., San Francisco, Calif.
Harnischfeger Corp., Milwaukee, Wis.
Hastings Air Control, Inc., Omaha, Nebr.
Indus Corp., Indianapolis, Ind.
Lug-All Co., The, Haverford, Pa.
Memco Crane Co., Oklahoma City, Okla.
Philadelphia Hoist Div., Industrial Enterprises, Inc., Doylestown, Pa.
Thern Machine Co., Winona, Minn.
Thor Power Tool Co., Aurora, Ill.
Wallace Products Co., B. E., Exton, Pa. (adjustable tripods, gantries)
Wise-Engineering Co., Newark, N. J.

HOLDERS AND FILES, CATALOG, FOR ENGINEERS' AND CONTRACTORS' OFFICES

Geneva Mfg. Co., South Elgin, Ill.

HOODS, FUME DISPOSAL, CORROSION RESISTANT

Arco Products, Automotive Rubber Co., Detroit, Mich.
Argo Plastic Products, Cleveland, O.
Ceilcote, Inc., Cleveland, O.
Corite Products, Inc., Chicago, Ill. (plastic)
DuVerre, Inc., Buffalo, N. Y. (plastic)
Schmieg Industries, Inc., Detroit, Mich.
United Sheet Metal Co., Inc., Columbus, O.

HOODS, FUME DISPOSAL, LABORATORY

Atlas Mineral Products Co., Mertztown, Pa.
Ceilcote, Inc., Cleveland, O.
Colonial Plastics Mfg. Co., Industrial Div., Cleveland, O. (plastic)
Corite Products, Inc., Chicago, Ill. (plastic)
DuVerre, Inc., Buffalo, N. Y. (plastic)
Ervite Corp., Erie, Pa.
General Metals, Inc., Greensboro, N. C.
Griffin & Co., Louisville, Ky.
Heil Process Equipment Corp., Cleveland, O.
Industrial Plastic Fabricators, Norwood, Mass. (PVC and polyethylene)
Kewaunee Mfg. Co., Adrian, Mich.
Kirk & Blum Mfg. Co., Cincinnati, O.
Mirror Patented Stove Pipe Co., Hartford, Conn.
Schneible Co., Claude B., Detroit, Mich.
Sheldon Equipment Co., E. H., Muskegon, Mich.
United Sheet Metal Co., Inc., Columbus, O.

United States Stoneware Co., Plastics & Synthetics Div., Akron, O.
Yerzley & Co., Newark, N. J.
Zack Co., The, Chicago, Ill.

HOSE CLAMPS

See Clamps, Hose

HOSE, FLEXIBLE, METAL, AND FITTINGS

Aeroquip Corp., Jackson, Mich.
Airaterra (Roylyn Products), Glendale, Calif.
American Metal Hose Div., American Brass Co., Waterbury, Conn.
Ammerman, Inc., Stillwater, Minn.
Argo Plastic Products, Cleveland, O.
Arrowhead Products, Div. of Federal-Mogul-Bower Bearings, Inc., Long Beach, Calif.
Atlantic Metal Hose Co., Inc., New York, N. Y.
Breeze Corporations, Inc., Union, N. J.
Burton Mfg. Co., Middlefield, O.
Chiksan Co., Brea, Calif.
Cobra Metal Hose Div., D-K Mfg. Co., Chicago, Ill.
Croker Fire Protection Co., New York, N. Y.
Dole Refrigerating Co., Chicago, Ill.
Finn & Co., Inc., T. R., Hawthorne, N. J.
Flexaust Co., New York, N. Y.
Flexible Metal Hose Mfg. Co., Costa Mesa, Calif.
Flexonics Corp., Maywood, Ill.
Goodall Rubber Co., Trenton, N. J.
International Metal Hose Co., Bellevue, O.
Johnson Metal Hose, Inc., Waterbury, Conn.
Korfund Co., Inc., Long Island City, N. Y.
Lenz Co., Dayton, O.
Marquette Coppersmithing Co., Philadelphia, Pa.
Mic-Lin Co., Maple Shade, N. J.
Packless Metal Hose, Inc., Mt. Vernon, N. Y.
Parks-Cramer Co., Fitchburg, Mass. (jacketed)
Pennsylvania Flexible Metallic Tubing Co., Philadelphia, Pa.
Perfecting Service Co., Charlotte, N. C.
Seamlex Co., Inc., Long Island City, N. Y.
Superior Valve & Fittings Co., Pittsburgh, Pa.
Techniflex Corp., Port Jervis, N. Y.
Titeflex, Inc., East Springfield, Mass.
U. S. Flexible Metallic Tubing Co., Los Angeles, Calif.
United Metal Hose Co., Inc., Long Island City, N. Y.
Universal Metal Hose Co., Chicago, Ill.
Vibration Mountings, Inc., Corona, N. Y.
Zallea Brothers, Wilmington, Del.

HOSE, NON-METAL, AND FITTINGS

Aeroquip Corp., Jackson, Mich.
Aeroquip, Inc., Van Wert, O.
Airaterra (Roylyn Products), Glendale, Calif.
American Metal Hose Div., American Brass Co., The, Waterbury, Conn.
Ammerman Inc., Stillwater, Minn.
Anchor Coupling Co., Inc., Libertyville, Ill.
Anchor Packing Co., Philadelphia, Pa.
Arrowhead Products, Div. of Federal-Mogul-Bower Bearings, Inc., Long Beach, Calif.
Binks Mfg. Co., Chicago, Ill.
Boston Woven Hose & Rubber Co., Div. of American Biltrite Rubber Co., Cambridge, Mass.
Continental Rubber Works, Erie, Pa.
De Vilbiss Co., The, Toledo, O.
Electric Hose & Rubber Co., Wilmington, Del.
Fine Products Co., Berwyn, Ill.
Flexaust Co., New York, N. Y.
Flexible Tubing Corp., Guilford, Conn.
Flexonics Corp., Maywood, Ill.
Gates Rubber Co., The, Denver, Colo.
Goodrich Industrial Products Co., B. F., Akron, O. (rubber)
Goodyear Tire & Rubber Co., Akron, O.
Hamilton Rubber Mfg. Corp., Trenton, N. J.
Hewitt-Robins Inc., Stamford, Conn.
Hofmann Engineering Co., Chicago, Ill.
Imperial Brass Mfg. Co., Chicago, Ill.
LaFavorite Rubber Mfg. Co., Hawthorne, N. J. (rubber)
LE-HI Div., Hose Accessories Co., Philadelphia, Pa.
Lenz Co., Dayton, O.
Mercer Rubber Co., Hamilton Sq., N. J.
Newage Industries, Inc., Jenkintown, Pa.

New York Belting & Packing Co., Passaic, N. J.
Parker-Hannifin Corp., Tube & Hose Fittings Div., Cleveland, O.
Polymer Corp., The, Reading, Pa. (nylon pressure tubing)
Porter Co., Inc., H. K., Quaker Rubber Div., Philadelphia, Pa.
Raybestos-Manhattan, Inc., Passaic, N. J.
Republic Rubber Div., Lee Rubber and Tire Corp., Youngstown, O
Research Vacuum Supply Co., Chicago, Ill.
Resistoflex Corp., Roseland, N. J.
Snap-Tite, Inc., Union City, Pa.
Superior Valve and Fittings Co., Pittsburgh, Pa.
Thermoid Co., Trenton, N. J.
Thor Power Tool Co., Aurora, Ill.
Titeflex, Inc., East Springfield, Mass. (teflon)
United States Rubber Co., New York, N. Y.
Vibration Mountings, Inc., Corona, N. Y.
Vortox Co., Claremont, Calif.
Weatherhead Co., The, Ft. Wayne Div., Ft. Wayne, Ind.

HOSE, REFRIGERANT CHARGING

Aeroquip Corp., Jackson, Mich.
Electric Hose & Rubber Co., Wilmington, Del.
Henry Valve Co., Melrose Park, Ill.
Imperial Brass Mfg. Co., Chicago, Ill.
Madden Brass Products Co., Aurora, Ill.
Mueller Brass Co., Port Huron, Mich.

HOSE, VENTILATING

See Ducts and Duct Fittings, Prefabricated, Non-Flexible, Non-Metallic

HOSPITAL OPERATING ROOM AIR CONDITIONING UNITS

See Units, Air Conditioning, Exclusively for Hospital Operating Rooms

HOT GAS DEFROSTING

See Systems, Hot Gas Defrosting for Refrigeration

HOT WATER HEATING AND CHILLED WATER SYSTEMS, BALANCING ELBOWS AND TEES FOR

See Elbows and Tees, Balancing, for Hot Water Heating and Chilled Water Systems

HOT WATER HEATING SYSTEMS

See Systems, Heating, Hot Water

HOT WATER PRESSURE REGULATORS

See Regulators, Pressure, Hot Water Heating Systems

HOUSINGS, FAN, CENTRIFUGAL

(Housing only—not complete fans)

Air Controls, Inc., Div. of Cleveland Heater Co., Cleveland, O.
Airfan Engineering Co., Los Angeles, Calif.
Ammerman Inc., Stillwater, Minn.
Barry Blower Co., Minneapolis, Minn.
Brookside Corp., McCordsville, Ind.
Brundage Co., The, Kalamazoo, Mich.
Champion Blower & Forge Co., Lancaster, Pa.
Chicago Blower Corp., Franklin Park, Ill.
Cincinnati Metalcrafts Inc., Cincinnati, O.
Clarage Fan Co., Kalamazoo, Mich.
Commercial Shearing & Stamping Co., Youngstown, O.
Detroit Stamping Co., Detroit, Mich.
Ervite Corp., Erie, Pa.
Garden City Fan Co., Niles, Mich.
Haveg Industries, Inc., Wilmington, Del. (plastic for corrosive fumes)
Industrial Plastic Fabricators, Norwood, Mass. (PVC)
Martin Fan & Blower Co., Chicago, Ill.
Master Fan Corp., Los Angeles, Calif.
Morrison Products, Inc., Cleveland, O.
Phoenix Products Co., Milwaukee, Wis. (spun inlets)
Power Engineering Corp., Weirton, W. Va.
Revcor Inc., Carpentersville, Ill.
Ripley Co., Inc., Middletown, Conn.
Torit Mfg. Co., St. Paul, Minn.
Torrington Mfg. Co., The, Torrington, Conn.
United Sheet Metal Co., Inc., Columbus, O.
United States Air Conditioning Corp., Delaware, O.

Utica Products, Inc., Utica, N. Y.
Utility Fan Corp., Div. of Utility Appliance Corp., Los Angeles, Calif.

HOUSINGS, FAN, PROPELLER

(Housing only—not complete fans)

Allen Cooler & Ventilator, Inc., Rochester, Mich.
Ammerman Inc., Stillwater, Minn.
Atmos Corp., Chicago, Ill.
Brookside Corp., McCordsville, Ind.
Chicago Blower Corp., Franklin Park, Ill.
Cincinnati Metalcrafts Inc., Cincinnati, O.
Commercial Shearing & Stamping Co., Youngstown, O.
Ervite Corp., Erie, Pa.
General Blower Co., Morton, Ill.
Haveg Industries, Inc., Wilmington, Del. (plastic for corrosive fumes)
Industrial Plastic Fabricators, Norwood, Mass. (PVC)
International Engineering, Inc., Dayton, O.
Kody Blower Co., Trenton, N. J.
Martin Fan & Blower Co., Chicago, Ill.
Phoenix Products Co., Milwaukee, Wis. (spun inlets)
United Sheet Metal Co., Inc., Columbus, O.

HUMIDIFIERS, CENTRAL PLANT

Air & Refrigeration Corp., New York, N. Y.
American Blower Div. of American-Standard, Detroit, Mich.
American Moistening Co., Cleveland, N. C.
Armstrong Machine Wks., Three Rivers, Mich.
Bahnson Co., Winston-Salem, N. C.
Buensod-Stacey, Inc., New York, N. Y.
Buffalo Forge Co., Buffalo, N. Y.
Carrier Corp., Syracuse, N. Y.
Clarage Fan Co., Kalamazoo, Mich.
Cleveland Humidifier Co., Cleveland, O.
Farr Co., Los Angeles, Calif.
General Filters, Inc., Novi, Mich.
HERRmidifier Co., Neffsville, Pa.
Johnson Service Co., Milwaukee, Wis.
Little Giant Pump Co., Div. of Little Giant Vaporizer Co., Inc., Oklahoma City, Okla. (vaporizers for humidifiers)
Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.
Niagara Blower Co., New York, N. Y.
Parks-Cramer Co., Fitchburg, Mass.
Powers Regulator Co., Skokie, Ill.
Research Products Corp., Madison, Wis.
Southworth Machine Co., Portland, Me.
Steel Products Engineering Co., Springfield, O.
Surface Combustion Corp., Toledo, O.
Swan Humidifier Co., Ballston Spa., N. Y.
Trane Co., The, LaCrosse, Wis.
Vilter Mfg. Co., Milwaukee, Wis.
Walton Laboratories, Inc., Irvington, N. J.
Water Cooling Corp., New York, N. Y.
York Corp., Subsidiary of Borg-Warner Corp., York, Pa.

HUMIDIFIERS, DIRECT, SPRAY HEAD

Abbeon Supply Co., Jamaica, N. Y.
American Moistening Co., Cleveland, N. C.
Anetsberger Bros., Inc., Northbrook, Ill.
Bahnson Co., Winston-Salem, N. C. (Centrifugal)
Binks Mfg. Co., Chicago, Ill.
Buffalo Forge Co., Buffalo, N. Y.
Century Engineering Corp., Cedar Rapids, Ia.
Grinnell Co., Inc., Providence, R. I.
HERRmidifier Co., Neffsville, Pa.
Lennox Industries, Inc., Marshalltown, Ia.
Maid-O'-Mist, Inc., Chicago, Ill.
Marlo Coil Co., St. Louis, Mo.
Murray Mfg. Co., D. J., Wausau, Wis.
Parks-Cramer Co., Fitchburg, Mass.
R. I. Humidifier & Ventilating Co., Inc., Cambridge, Mass.
Roberson, Inc., Seattle, Wash.
Ross Sprinkler Co., Rosemead, Calif.
Spray Engineering Co., Burlington, Mass.
Spraying Systems Co., Bellwood, Ill.
Supreme Electric Products Corp., Rochester, N. Y.
Walton Laboratories, Inc., Irvington, N. J.
Water Cooling Corp., New York, N. Y.

HUMIDIFIERS FOR RADIATORS AND CONVECTORS

Maid-O'-Mist, Inc., Chicago, Ill.

HUMIDIFIERS, RADIATOR VENT VALVE

G & H Mfg. Co., Philadelphia, Pa.
Maid-O'-Mist, Inc., Chicago, Ill.

HUMIDIFIERS, UNIT, ROOM TYPE

(Without Heating)

Abbeon Supply Co., Jamaica, N. Y.
American Moistening Co., Cleveland, N. C.
Armstrong Machine Wks., Three Rivers, Mich.
Bahnson Co., Winston-Salem, N. C.
Coolerator Div., McGraw-Edison Co., Albion, Mich.
Fresh'nd-Aire Co., Div. of Corey Corp., Chicago, Ill.
Grinnell Co., Inc., Providence, R. I.
HERRmidifier Co., Neffsville, Pa.
Kelvinator Div., American Motors Corp., Detroit, Mich.
Murray Mfg. Co., D. J., Wausau, Wis.
Research Products Corp., Madison, Wis.
Spraying Systems Co., Bellwood, Ill.
Standard Engineering Wks., Pawtucket, R. I.
Swan Humidifier Co., Ballston Spa, N. Y.
Walton Laboratories, Inc., Irvington, N. J.
Water Cooling Corp., New York, N. Y.

HUMIDIFYING RADIATORS

See Radiators, Humidifying

HUMIDISTATS

American Instrument Co., Inc., Silver Spring, Md.
American Moistening Co., Cleveland, N. C.
Bahnson Co., Winston-Salem, N. C.
Barber-Colman Co., Rockford, Ill.
Bristol Co., The, Waterbury, Conn.
Friez Instrument Div., Bendix Aviation Corp., Baltimore, Md.
General Controls Co., Glendale, Calif., and Skokie, Ill.
Johnson Service Co., Milwaukee, Wis.
Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.
National Controls, Inc., Newton, Mass.
Parks-Cramer Co., Fitchburg, Mass.
Penn Controls, Inc., Goshen, Ind.
Powers Regulator Co., Skokie, Ill.
Standard Engineering Wks., Pawtucket, R. I.
Trerice Co., H. O., Detroit, Mich.
Universal Dynamics Corp., Arlington, Va.
Walton Laboratories, Inc., Irvington, N. J.

HUMIDITY INDICATORS

See Indicator-Controllers, Relative Humidity; Psychrometers

HUMIDITY RECORDERS

See Recorders, Humidity

HUMIDITY AND TEMPERATURE CONTROLS

See Humidistats; Recorder-Controllers; Thermostats

HYDRAULIC CLUTCHES

See Drives, Fluid or Hydraulic, for Power Transmission

HYDRAULIC PIPE PUSHERS

See Pushers, Pipe, Hydraulic

HYDRAULIC SPEED CHANGERS

See Changers, Speed, Hydraulic Coupling

HYGROMETERS

Abbeon Supply Co., Jamaica, N. Y.
Airguide Instrument Co., Chicago, Ill.
Airserco Mfg. Co., Pittsburgh, Pa.
American Instrument Co., Inc., Silver Spring, Md.
American Moistening Co., Cleveland, N. C.
Bristol Co., The, Waterbury, Conn.
Foxboro Co., Foxboro, Mass.
G. M. Mfg. Co., New York, N. Y.
Garden City Instruments, Inc., Chicago, Ill.
General Scientific Equipment Co., Philadelphia, Pa.
Green Instruments, Inc., Henry J., Westbury, N. Y.
H-B Instrument Co., Philadelphia, Pa.
Hill & Co., E. Vernon, Lake Geneva, Wis.
Johnson Service Co., Milwaukee, Wis.

Manufacturers Engineering & Equipment Corp., Hatboro, Pa.
Minneapolis-Honeywell Regulator Co., Industrial Div., Philadelphia, Pa.
Moeller Instrument Co., Richmond Hill, N. Y.
Palmer Thermometers, Inc., Cincinnati (Norwood), O.
Precision Thermometer & Instrument Co., Philadelphia, Pa.
Scientific Instrument Co., Detroit, Mich.
Taylor Instrument Companies, Rochester, N. Y.
Thwing-Albert Instrument Co., Philadelphia, Pa.
Trerice Co., H. O., Detroit, Mich.
Weksler Instruments Corp., Freeport, L. I., N. Y.
Weston Instruments, Div. of Daystrom, Inc., Newark, N. J.
Will Corp., Rochester, N. Y.

HYGROSTATS
See Humidistats

IDENTIFICATION MARKERS (For Piping Services)
Brady Co., W. H., Milwaukee, Wis. (self-sticking)
Chase Brass & Copper Co., Waterbury, Conn.
Markal Co., Chicago, Ill.
Meyercord Co., The, Chicago, Ill. (for piping service)
North Shore Nameplate Inc., Bayside, N. Y. (also for wiring and conduit systems)
Pee Cee Tape & Label Co., Los Angeles, Calif.
Seton Name Plate Co., New Haven, Conn.
Westline Products Div. of Western Lithograph Co., Los Angeles, Calif.
Wilmington Plastics Co., Wilmington, Del.
Zaco Laboratories, Cleveland, O.

IMMERSION THERMOSTATS
See Thermostats, Immersion

INCINERATORS, FOR LARGE BUILDINGS
American Engineering Co., Philadelphia, Pa.
Canton Stoker Corp., Canton, O.
Flynn & Emrich Co., Baltimore, Md. (stoker type)
Goder, Inc., Joseph, Chicago, Ill.
Goder Incinerator Corp., Blue Island, Ill.
Harmond Company, Cleveland, O.
Incinerator Corp. of America, Eastlake, O.
Incinerator Products Co., Detroit, Mich.
Morse Boulger Destructor Co., New York.
Plibrico Co., Chicago, Ill.
Silent Glow Oil Burner Co., Hartford, Conn.
Syrall Mfg. Co., Syracuse, N. Y.

INDICATING THERMOMETERS
See Thermometers, Indicating

INDICATOR-CONTROLLERS, PRESSURE
Assembly Products, Inc., Chesterland, O.
Automatic Control Co., St. Paul, Minn.
Automatic Timing & Controls, Inc., King of Prussia, Pa.
Bailey Co., Chas. M., San Francisco, Calif.
Bailey Meter Co., Cleveland, O.
Barton Instrument Corp., Monterey Park, Calif.
Bristol Co., The, Waterbury, Conn.
Davis Regulator Co., Chicago, Ill.
Daytronic Corp., Dayton, O.
Dickson Co., The, Chicago, Ill.
Fischer & Porter Co., Hatboro, Pa.
Fisher Governor Co., Marshalltown, Ia.
Foxboro Co., Foxboro, Mass.
Garden City Instruments, Inc., Chicago, Ill.
General Controls Co., Glendale, Calif.
Giannini & Co., Inc., G. M., Pasadena, Calif.
Hagan Chemicals & Controls, Inc., Pittsburgh, Pa.
Hastings-Raydist, Inc., Hampton, Va.
Hays Corp., Michigan City, Ind.
Instrument Div., Robertshaw-Fulton Controls Co., Philadelphia, Pa.
Keckley Co., O. C., Skokie, Ill.
Kieley & Mueller, Inc., Middletown, N. Y.
Mason-Neilan Div. of Worthington Corp., Norwood, Mass.
Minneapolis-Honeywell Regulator Co., Industrial Div., Philadelphia, Pa.
Moore Products Co., Philadelphia, Pa.
Norwood Controls, A Unit of Detroit Controls, Norwood, Mass.
Penn Instruments Div. of Burgess-Manning Co., Philadelphia, Pa.
Powers Regulator Co., Skokie, Ill.
Reliance Instrument Mfg. Corp., Glen Cove, Long Island, N. Y.
Scientific Instrument Co., Detroit, Mich.
Sostman & Co., H. E., Cranford, N. J.
Swartwout Co., The, Cleveland, O.
Taylor Instrument Companies, Rochester, N. Y.
Trerice Co., H. O., Detroit, Mich.
Trimount Instrument Co., Chicago, Ill.
United States Gauge Div. of American Ma-
Weksler Instruments Corp., Freeport, L. I., N. Y.
Weston Instruments, Div. of Daystrom, Inc., Newark, N. J.

INDICATOR-CONTROLLERS, RELATIVE HUMIDITY
American Instrument Co., Inc., Silver Spring, Md.
American Moistening Co., Cleveland, N. C.
Automatic Timing & Controls, Inc., King of Prussia, Pa.
Barber-Colman Co., Rockford, Ill.
Bristol Co., The, Waterbury, Conn.
Foxboro Co., Foxboro, Mass.
Garden City Instruments, Inc., Chicago, Ill.
Johnson Service Co., Milwaukee, Wis.
Leeds & Northrup Co., Philadelphia, Pa.
Minneapolis-Honeywell Regulator Co., Industrial Div., Philadelphia, Pa.
Scientific Instrument Co., Detroit, Mich.
Serdex, Inc., Boston, Mass.
Taylor Instrument Companies, Rochester, N. Y.
Trerice Co., H. O., Detroit, Mich.
United States Gauge Div. of American Machine & Metals, Inc., Sellersville, Pa.
Universal Dynamics Corp., Arlington, Va.
Weksler Instruments Corp., Freeport, L. I., N. Y.
Weston Instruments, Div. of Daystrom, Inc., Newark, N. J.

INDICATOR-CONTROLLERS, TEMPERATURE
American Instrument Co., Inc., Silver Spring, Md.
Assembly Products, Inc., Chesterland, O.
Bailey Co., Chas. M., San Francisco, Calif.
Bailey Meter Co., Cleveland, O.
Barber-Colman Co., Rockford, Ill.
Bristol Co., The, Waterbury, Conn.
Century Instrument Co., Detroit, Mich.
Cybertronic Corp. of America, Chester, Pa.
Defender Instrument & Regulator Co., Boody, Ill.
Dickson Co., The, Chicago, Ill.
Fenwal Inc., Ashland, Mass.
Fischer & Porter Co., Hatboro, Pa.
Foxboro Co., Foxboro, Mass.
Fulton Sylphon Div., Robertshaw-Fulton Controls Co., Knoxville, Tenn.
Garden City Instruments, Inc., Chicago, Ill.
General Controls Co., Glendale, Calif.
General Electric Co., Apparatus Sales Div., Schenectady, N. Y.
Hagan Chemicals & Controls, Inc., Pittsburgh, Pa.
Hays Corp., Michigan City, Ind.
Illinois Testing Laboratories, Inc., Chicago.
Instrument Div., Robertshaw-Fulton Controls Co., Philadelphia, Pa.
Johnson Service Co., Milwaukee, Wis.
Leeds & Northrup Co., Philadelphia, Pa.
Mason-Neilan Div. of Worthington Corp., Norwood, Mass.
Minneapolis-Honeywell Regulator Co., Industrial Div., Philadelphia, Pa.
Moore Products Co., Philadelphia, Pa.
Norwood Controls, A Unit of Detroit Controls, Norwood, Mass.
Partlow Corp., The, New Hartford, N. Y.
Penn Instruments Div. of Burgess-Manning Co., Philadelphia, Pa.
Powers Regulator Co., Skokie, Ill.
Pyrometer Instrument Co., Inc., Bergenfield, N. J.
Sarco Co., Inc., New York, N. Y.
Scientific Instrument Co., Detroit, Mich.
Serdex, Inc., Boston, Mass.
Swartwout Co., The, Cleveland, O.
Taylor Instrument Companies, Rochester, N. Y.
Thermo Electric Co., Inc., Saddle Brook, N. J.
Thwing-Albert Instrument Co., Philadelphia.
Trerice Co., H. O., Detroit, Mich.
United Electric Controls Co., Watertown, Mass.
United States Gauge Div. of American Machine & Metals, Inc., Sellersville, Pa.
Weksler Instruments Corp., Freeport, L. I., N. Y.
West Instrument Corp., Chicago, Ill.
Weston Instruments, Div. of Daystrom, Inc., Newark, N. J.
Wiegand Co., Edwin L., Pittsburgh, Pa.

INDICATORS, CARBON DIOXIDE, BOILER ROOM
For Portable CO_2 Analyzers, See Analyzers, Carbon Dioxide, Portable

Davis Instruments, Div. of Davis Emergency Equipment Co., Inc., Newark, N. J.
Defender Instrument and Regulator Co., Boody, Ill.
Ellison Draft Gage Co., Chicago, Ill.
Engelhard, Inc., Chas., East Newark, N. J.
General Scientific Equipment Co., Philadelphia, Pa.
Hays Corp., Michigan City, Ind.
Mine Safety Appliances Co., Pittsburgh, Pa.
Permutit Co., Div. of Pfaudler Permutit, Inc., New York, N. Y.
Republic Flow Meters Co., Chicago, Ill.
Standard Instrument Div., Heat-Timer Corp., New York, N. Y.
Uehling Instrument Co., Paterson, N. J.

INDICATORS, DEW POINT
American Instrument Co., Inc., Silver Spring, Md.
Anders Lykens Corp., Div. of Milton Roy Co., Philadelphia, Pa.
Bristol Co., The, Waterbury, Conn.
Foxboro Co., Foxboro, Mass.
Hill & Co., E. Vernon, Lake Geneva, Wis.
Illinois Testing Laboratories, Inc., Chicago.
Minneapolis-Honeywell Regulator Co., Industrial Div., Philadelphia, Pa.
Pittsburgh Lectrodryer Div., McGraw-Edison Co., Pittsburgh, Pa.

INDICATORS, FLOW
See Meters, Flow

INDICATORS, LIQUID LEVEL, BOILER AND TANK
Automatic Control Co., St. Paul, Minn.
Automatic Timing & Controls, Inc., King of Prussia, Pa.
Bailey Co., Chas. M., San Francisco, Calif.
Barton Instrument Corp., Monterey Park, Calif.
Bristol Co., The, Waterbury, Conn.
Builders-Providence Div., B-I-F Industries, Inc., Providence, R. I.
Defender Instrument & Regulator Co., Boody, Ill.
Engelhard, Inc., Charles, East Newark, N. J.
Ernst Water Column & Gauge Co., Livingston, N. J.
Fischer & Porter Co., Hatboro, Pa.
Foxboro Co., Foxboro, Mass.
Frick Co., Waynesboro, Pa.
General Controls Co., Glendale, Calif.
General Electric Co., Apparatus Sales Div., Schenectady, N. Y.
Hagan Chemicals & Controls, Inc., Pittsburgh, Pa.
Hays Corp., Michigan City, Ind.
Healy Ruff Co., St. Paul, Minn.
Henry Valve Co., Melrose Park, Ill.
Instruments, Inc., Tulsa, Okla.
Instrument Div., Robertshaw-Fulton Controls Co., Philadelphia, Pa.
Magnetrol, Inc., Chicago, Ill.
Mason-Neilan Div. of Worthington Corp., Norwood, Mass.
Meriam Instrument Co., The, Cleveland, O.
Minneapolis-Honeywell Regulator Co., Industrial Div., Philadelphia, Pa.
New York Air Valve Corp., Brooklyn, N. Y.
Norwood Controls, A Unit of Detroit Controls, Norwood, Mass.
Penberthy Mfg. Co., Div. of Buffalo Eclipse Corp., Detroit, Mich.

Penn Instruments Div. of Burgess-Manning Co., Philadelphia, Pa.
Petrometer Corp., Long Island City, N. Y.
Phillips & Co., H. A., Chicago, Ill.
Photobell Co., Inc., New York, N. Y.
Reliance Gauge Column Co., Cleveland, O.
Republic Flow Meters Co., Chicago, Ill.
Ripley Co., Inc., Middletown, Conn.
Swift Lubricator Co., Inc., Elmira, N. Y.
Taylor Instrument Companies, Rochester, N. Y.
Techniflex Corp., Port Jervis, N. Y.
Trerice Co., H. O., Detroit, Mich.
Trimount Instrument Co., Chicago, Ill.
Uehling Instrument Co., Paterson, N. J.
Worner Electronic Devices, Rankin, Ill.
Yarnall-Waring Co., Philadelphia, Pa.

INDICATORS, pH

American Instrument Co., Inc., Silver Spring, Md.
Analytical Measurements, Inc., Chatham, N. J.
Assembly Products, Inc., Chesterland, O.
Berna Corp., Garwood, N. J.
Bristol Co., The, Waterbury, Conn.
Ernst Water Column & Gauge Co., Livingston, N. J.
Foxboro Co., Foxboro, Mass.
Instrument Div., Robertshaw-Fulton Controls Co., Philadelphia, Pa.
Leeds & Northrup Co., Philadelphia, Pa.
Metropolitan Refining Co., Inc., Long Island City, N. Y.
Minneapolis-Honeywell Regulator Co., Industrial Div., Philadelphia, Pa.
National Aniline Div., Allied Chemicals Corp., New York, N. Y.
Oakite Products, Inc., New York, N. Y.
Thomas Co., Arthur H., Philadelphia, Pa.
Wallace & Tiernan Inc., Belleville, N. J.
Weston Instruments, Div. of Daystrom, Inc., Newark, N. J.
Will Corp., Rochester, N. Y.

INDICATORS, RELATIVE HUMIDITY

Abbeon Supply Co., Jamaica, N. Y.
Airguide Instrument Co., Chicago, Ill.
Airserco Mfg. Co., Inc., Pittsburgh, Pa.
American Instrument Co., Inc., Silver Spring, Md.
Andrew Technical Supply Co., Chicago, Ill.
El-Tronics, Inc., Philadelphia, Pa.
Foxboro Co., Foxboro, Mass.
Garden City Instruments, Inc., Chicago, Ill.
Green Instruments, Inc., Henry J., Westbury, N. Y.
Hill & Co., E. Vernon, Lake Geneva, Wis.
Minneapolis-Honeywell Regulator Co., Industrial Div., Philadelphia, Pa.
Serdex, Inc., Boston, Mass.
Trerice Co., H. O., Detroit, Mich.
United States Gauge Div. of American Machine & Metals, Inc., Sellersville, Pa.
Universal Dynamics Corp., Arlington, Va.
Universal Instrument Co., Brentwood, Md.
Walton Laboratories, Inc., Irvington, N. J.
Weighing & Control Component, Inc., Hatboro, Pa.
Weksler Instruments Corp., Freeport, L. I., N. Y.
Weston Instruments, Div. of Daystrom, Inc., Newark, N. J.

INDICATORS, SMOKE

Brooke Engineering Co., Philadelphia, Pa.
CO Two Systems, Fyr-Fyter Co., Newark, N. J.
Edwards, L. V., Rockville Center, N. Y.
Electronics Corp. of America, Cambridge, Mass.
Gelman Instrument Co., Chelsea, Mich.
General Blower Co., Philadelphia, Pa.
General Electric Co., Apparatus Sales Div., Schenectady, N. Y.
Photobell Co., Inc., New York, N. Y.
Reliance Instrument Mfg. Corp., Glen Cove, Long Island, N. Y.
Worner Electronic Devices, Rankin, Ill.

INDICATORS, SOUND LEVEL

Airserco Mfg. Co., Inc., Pittsburgh, Pa.
Mine Safety Appliances Co., Pittsburgh, Pa.
Scott, Inc., H. H., Inst. Div., Maynard, Mass.
Simpson Electric Co., Chicago, Ill.

INDICATORS, SPECIFIC GRAVITY, REMOTE READING

Hays Corp., The, Michigan City, Ind.
Meriam Instrument Co., The, Cleveland, O.
Permutit Co., The, Div. of Pfaudler Permutit, Inc., New York, N. Y.
Petrometer Corp., Long Island City, N. Y.
Precision Thermometer & Instrument Co., Philadelphia, Pa.
Schutte and Koerting Co., Buck County, Pa.
Uehling Instrument Co., Paterson, N. J.

INDICATORS, VALVE POSITION

Barber-Colman Co., Rockford, Ill.
Bridgeport Thermostat Div., Robertshaw-Fulton Controls Co., Milford, Conn.
Builders-Providence Div., B-I-F Industries, Inc., Providence, R. I.
Crane Co., Chicago, Ill.
Fairbanks Co., The, New York, N. Y.
Sostman & Co., H. E., Cranford, N. J.
Stockham Valves & Fittings, Birmingham, Ala.
Tejax Engineering Corp., Pawtucket, R. I.

INDIRECT HEATING SURFACE

See Surface, Finned, Heating

INDIRECT WATER HEATERS

See Heaters, Water, Indirect

INDUCED DRAFT FANS

See Fans, Mechanical Draft, for Boilers

INDUSTRIAL AIR CONDITIONERS

See Units, Air Conditioning, Industrial Type

INDUSTRIAL DRYERS

See Dryers, Industrial

INJECTOR RECIRCULATORS FOR REFRIGERANTS

Phillips & Co., H. A., Chicago, Ill.

INSERTS, CONCRETE

Air-Path Products Co., Baltimore, Md.
Carpenter & Paterson, Inc., Cambridge, Mass.
Fee & Mason Mfg. Co., Inc., Manasquan, N. J.
Gateway Engineering Co., Chicago, Ill.
Globe Products, Huppower Div., Hupp Corp., Detroit, Mich.
Grabler Mfg. Co., Cleveland, O.
Healy Ruff Co., St. Paul, Minn.
Hilti Rapid Fastening Systems, Inc., Stamford, Conn.
Industrial Tubular Equipment Co., North Hollywood, Calif.
Leibfried Mfg. Corp., C. H., Brooklyn, N. Y.
Modern Hanger Corp., The, Cleveland, O.
Mult-A-Frame Div., Ainsworth Mfg. Corp., Detroit, Mich.
Phillips Drill Co., Michigan City, Ind.
Republic Steel Corp., Cleveland, O.
Rockwood Sprinkler Co., Worcester, Mass.
South Chester Corp., Southco Div., Lester, Pa.
Steel City Electric Co., Pittsburgh, Pa.
Unistrut Products Co., Chicago, Ill.

INSERTS, METAL FOR PLASTIC PIPE

Telsco Fittings Div., Dallas, Tex.
Union Malleable Mfg. Co., Ashland, O.

INSTANTANEOUS WATER HEATERS

See Heaters, Water, Steam, Instantaneous

INSTRUMENTS, SOLAR SENSING, FOR HEATING AND AIR CONDITIONING

Barber-Colman Co., Rockford, Ill.
Construction Specialties, Inc., Cranford, N. J.
Johnson Service Co., Milwaukee, Wis.
Powers Regulator Co., Skokie, Ill.

INSULATING CONCRETE

See Concrete, Insulating

INSULATION ANCHORS AND ADHESIVES

See Fasteners, Insulation

INSULATION, BOILER, TANK, AND EQUIPMENT

Acme Asbestos Covering & Flooring Co., Chicago, Ill.
American Hair & Felt Co., Chicago, Ill.
Armstrong Cork Co., Lancaster, Pa.
Asbestos Asphalt Insulation Co., Chicago, Ill.
Badham Insulation Co., Inc., Birmingham, Ala.
Baldwin-Hill Co., Trenton, N. J., (mineral wool blankets, monoblock, super powerhouse cement, #1 cement)
Bigelow Liptak Corp., Detroit, Mich.
Bird-Archer Co., Philadelphia, Pa.
Botfield Refractories Co., Philadelphia, Pa.
Carey Mfg. Co., Philip, Lockland, Cincinnati, O.
Eagle-Picher Co., Cincinnati, O.
Ehret Magnesia Mfg. Co., Valley Forge, Pa. (Calcium silicate; magnesia)
Emjay Maintenance Engineers, Rutherford, N. J.
Forty-Eight Insulations, Inc., Aurora, Ill.
Grant Wilson, Inc., Chicago, Ill.
Green Fire Brick Co., Mexico, Mo.
International Vermiculite Co., Girard, Ill.
Johns-Manville, New York, N. Y.
Kaylo Div., Owens-Illinois Glass Co., Toledo, O.
Keasbey Co., Robert A., New York, N. Y. (industrial rock wool reinforced with wire)
Keasbey & Mattison Co., Ambler, Pa.
L.O.F. Glass Fibers Co., Toledo, O.
Lockport Mills, Inc., Lockport, N. Y.
MMM, Inc., Portsmouth, O. (low temperature)
Monsanto Chemical Co., St. Louis, Mo. (silica aerogel)
Mundet Cork Corp., North Bergen, N. J. (Cork)
Munn and Steele, Inc., South Boston, Mass.
National Cork Co., Englewood, N. J. (Corkboard)
Nicolet Industries, Inc., Hamilton, O. (asbestos)
Norristown Asbestos Div., Nicolet Industries, Inc., Norristown, Pa. (Asbestos and magnesia)
North American Asbestos Corp., Chicago, Ill.
Owens-Corning Fiberglas Corp., Toledo, O. (block or board)
Pabco Industrial Insulations Div., Fibreboard Paper Products Corp., San Francisco, Calif. (85% magnesia; calcium silicate; high temperature)
Pacific Lumber Co., The, San Francisco, Calif.
Pacific States Felt & Mfg. Co., Inc., San Francisco, Calif. (cork, hair felt)
Pittsburgh Corning Corp., Pittsburgh, Pa.
Pittsburgh Plate Glass Co., Pittsburgh, Pa.
Plibrico Co., Chicago, Ill.
Poe Co., C. W., Cleveland, O. (mineral wool)
Quigley Co., Inc., New York, N. Y.
Rector Mineral Trading Corp., New York, N. Y.
Reflectal Corp. Subsidiary, Borg-Warner Corp., Chicago, Ill.
Refractory & Insulation Corp., New York, N. Y. (Blanket, block, cement)
Robinson Industries, Coleman, Mich. (expanded plastic)
Ruberoid Co., New York, N. Y. (Asbestos, calsilite)
Smith & Kanzler Corp., Linden, N. J.
Standard Asbestos Mfg. Co., Chicago, Ill.
Standard Fuel Engineering Co., Detroit, Mich.
Thermo-Sound Products, Div. of Kittell-Lacy, Inc., El Monte, Calif.
Tufflite Plastics, Inc., Ballston Spa, N. Y. (low temp.)
United Cork Co., Kearney, N. J. (Cork)
United States Mineral Wool Co., Stanhope, N. J. (loose wool)
Walker Jamar Co., Duluth, Minn.
Zonolite Co., Chicago, Ill. (plastic)

INSULATION, BUILDING

Acme Asbestos Covering & Flooring Co., Chicago, Ill. (Rock wool)
Alumiseal Corp., New York, N. Y. (reflective)
American Flange & Mfg. Co., Inc., New York, N. Y. (Metal sheets)

Armstrong Cork Co., Lancaster, Pa. (Corkboard, fibre board, rigid foamed plastic board)
Badham Insulation Co., Inc., Birmingham, Ala.
Baldwin-Hill Co., Trenton, N. J. (spun mineral wool blankets)
Barrett Div., Allied Chemical & Dye Corp., New York, N. Y. (Rock wool loose, batts)
Carey Mfg. Co., Philip, Lockland, Cincinnati, O. (Rock wool)
Carney Co., Inc., The, Mankato, Minn. (blankets; loose fill)
Celotex Corp., The, Chicago, Ill. (flexible, semi-rigid, and rigid)
Chamberlin Co. of America, Detroit, Mich.
Devices, Inc., A Div. of Miracle Adhesives Corp., Bellmore, N. Y. (vapor barrier materials for insulation)
Dow Chemical Co., The, Midland, Mich.
Dyfoam Corp., Newcastle, Pa.
Eagle-Picher Co., Cincinnati, O. (Loose, fill, batt and granulated)
Emjay Maintenance Engineers, Rutherford, N. J.
Flintkote Co., The, New York, N. Y. (glass wool)
Forty-Eight Insulations, Inc., Aurora, Ill.
Gustin-Bacon Mfg. Co., Kansas City, Mo.
Infra Insulation, Inc., New York, N. Y. (parallel and accordion—reflective, asbestos)
Insulite Div. Minnesota and Ontario Paper Co., Minneapolis, Minn. (wood fibre)
International Vermiculite Co., Girard, Ill. (Loose fill)
Johns-Manville, New York, N. Y.
Johnston Foil Mfg. Co., St. Louis, Mo. (Foil, aluminum, tin, lead)
Kaylo Div., Owens-Illinois Glass Co., Toledo, O. (block type)
L.O.F. Glass Fibers Co., Toledo, O.
Lockport Mills, Inc., Lockport, N. Y.
Mearlcrete Div., Mearl Mfg. Corp., Roselle Park, N. J. (roof fill, floor fill, perimeter)
Minnesota & Ontario Paper Co., Minneapolis, Minn.
Munn & Steele, Inc., South Boston, Mass.
National Cork Co., Englewood, N. J. (Corkboard)
National Gypsum Co., Buffalo, N. Y. (perimeter insulation)
Nelson Mfg. Co., B. F., Minneapolis, Minn.
North American Asbestos Corp., Chicago, Ill.
Owens-Corning Fiberglas Corp., Toledo, O. (batts or blankets)
Pacific Lumber Co., The, San Francisco, Calif.
Pittsburgh Corning Corp., Pittsburgh, Pa.
Pittsburgh Plate Glass Co., Pittsburgh, Pa.
Plastergon Wall Board Co., Buffalo, N. Y. (Rigid board)
Poe Co., C. W., Cleveland, O. (mineral wool)
Rector Mineral Trading Corp., New York, N. Y.
Reflectal Corp. Subsid., Borg-Warner Corp., Chicago, Ill.
Refractory & Insulation Corp., New York, N. Y. (Rock, slag wool)
Revere Copper & Brass, Inc., Foil Div., Brooklyn, N. Y. (foil)
Reynolds Metals Co., Richmond, Va.
Richkraft Co., Chicago, Ill. (reflective)
Rubatex Div., Great American Industries, Inc., Bedford, Va. (low temperature)
Ruberoid Co., New York, N. Y.
Schlegel Mfg. Co., Rochester, N. Y. (for weather-stripping doors & windows)
Silvercote Products, Inc., Chicago, Ill.
Sprayo-Flake Co., Chicago, Ill.
Standard Asbestos Mfg. Co., Chicago, Ill. (Asbestos, hairfelt)
Star Woolen Co., Cohoes, N. Y.
Tennessee Products and Chemical Corp., Nashville, Tenn.
United Cork Companies, Kearny, N. J. (Cork)
United States Gypsum Co., Chicago, Ill. (Wool and USG Ins. board)
United States Mineral Wool Co., Stanhope, N. J. (Mineral wool, granulated wool, loose wool)
United States Pipe & Foundry Co., Birmingham, Ala. (mineral wool-batts and pellets)
Wilson & Co., Inc., Chicago, Ill. (Board)
Wood Conversion Co., St. Paul, Minn.
Zonolite Co., Chicago, Ill. (Loose fill)

INSULATION, DUCT, SOUND DEADENING

For Application Inside Duct

American Hair & Felt Co., Chicago, Ill.
Asbestos Asphalt Insulation Co., Chicago, Ill.
Badham Insulation Co., Inc., Birmingham, Ala.
Baldwin-Hill Co., Trenton, N. J.
Celotex Corp., The, Chicago, Ill.
Ehret Magnesia Mfg. Co., Valley Forge, Pa.
Emjay Maintenance Engineers, Rutherford, N. J.
Felters Company, The, Boston, Mass. (wool felt)
General Sound Controls, Inc., Los Angeles, Calif. (prefabricated)
Grant Wilson, Inc., Chicago, Ill.
Gustin-Bacon Mfg. Co., Kansas City, Mo.
Insul-Coustic, Inc., Maspeth, Long Island, N. Y.
Insulite Div., Minnesota and Ontario Paper Co., Minneapolis, Minn. (wood fibre)
Inter-Coastal Paint Corp., East St. Louis, Ill.
Johns-Mauville, New York, N. Y. (mineral wool)
Keasbey & Mattison Co., Ambler, Pa.
L.O.F. Glass Fibers Co., Toledo, O.
Lockport Mills, Inc., Lockport, N. Y.
Minnesota Mining & Mfg. Co., St. Paul, Minn.
Mortell Co., J. W., Kankakee, Ill.
Mundet Cork Corp., North Bergen, N. J. (glass fibre)
Norristown Asbestos Div., Nicolet Industries, Inc., Norristown, Pa.
Owens-Corning Fiberglas Corp., Toledo, O. (flexible or board)
Rector Mineral Trading Corp., New York, N. Y.
Silvercote Products, Inc., Chicago, Ill.
Sound Reduction Corp., East Hartford, Conn. (sound absorbers)
Sprayo-Flake Co., Chicago, Ill.
Thompson and Co., Oakmont, Pa.
United Sheet Metal Co., Columbus, O.
Wood Conversion Co., St. Paul, Minn.
Zonolite Co., Chicago, Ill.

INSULATION, DUCT, THERMAL

Acme Asbestos Covering & Flooring Co., Chicago, Ill. (Asbestos)
American Flange & Mfg. Co., Inc., New York, N. Y.
American Hair & Felt Co., Chicago, Ill. (Hair felt)
Armstrong Cork Co., Lancaster, Pa. (Corkboard)
Asbestos Asphalt Insulation Co., Chicago, Ill.
Badham Insulation Co., Inc., Birmingham, Ala.
Baldwin-Hill Co., Trenton, N. J. (semi-rigid mineral wool)
Bigelow Liptak Corp., Detroit, Mich.
Carey Mfg. Co., Philip, Lockland, Cincinnati, O. (Asbestos)
Celotex Corp., The, Chicago, Ill.
Devices, Inc., A Div. of Miracle Adhesives Corp., Bellmore, N. Y. (prefab polyvinyl duct covering)
Dow Chemical Co., The, Midland, Mich.
Eagle-Picher Co., Cincinnati, O. (Mineral wool blankets)
Ehret Magnesia Mfg. Co., Valley Forge, Pa. (Cork, magnesia, hair felt)
Emjay Maintenance Engineers, Rutherford, N. J.
Felters Company, The, Boston, Mass. (Wool felt)
Flintkote Co., The, New York, N. Y. (fibrated, asphalt spray on)
Forty-Eight Insulations, Inc., Aurora, Ill.
Grant Wilson, Inc., Chicago, Ill.
Gustin-Bacon Mfg. Co., Kansas City, Mo.
Hunter Mfg. Co., Aluminum Insulation Div., Bristol, Pa. (aluminum)
Infra Insulation, Inc., New York, N. Y.
Insulite Div. Minnesota and Ontario Paper Co., Minneapolis, Minn. (Wood fibre)
Insul-Mastic Corp. of America, Summit, Ill.
International Vermiculite Co., Girard, Ill. (Block)
Johns-Manville, New York, N. Y. (Mineral wool)
Kaylo Div., Owens-Illinois Glass Co., Toledo, O.
Keasbey & Mattison Co., Ambler, Pa. (Asbestos)
L.O.F. Glass Fibers Co., Toledo, O.
Lockport Mills, Inc., Lockport, N. Y.
Lynch Asbestos Co., Los Angeles, Calif. (asbestos & foil aircells)
Minnesota Mining & Mfg. Co., St. Paul, Minn.
Mortell Co., J. W., Kankakee, Ill.
Mundet Cork Corp., North Bergen, N. J. (Cork)
Munn and Steele, Inc., South Boston, Mass.
National Cork Co., Englewood, N. J. (Corkboard)
Nicolet Industries, Inc., Hamilton, O. (asbestos)
Norristown Asbestos Div., Nicolet Industries, Inc., Norristown, Pa. (Asbestos and wool felt)
Owens-Corning Fiberglas Corp., Toledo, O. (Blanket or board)
Pabco Industrial Insulations Div., Fibreboard Paper Products Corp., San Francisco, Calif. (85% magnesia)
Pacific States Felt & Mfg. Co., Inc., San Francisco, Calif.
Pittsburgh Corning Corp., Pittsburgh, Pa.
Plasti-Foam Corp., Hoboken, N. J. (expanded polystyrene)
Poe Co., C. W., Cleveland, O. (mineral wool)
Quigley Co., Inc., New York, N. Y.
Rector Mineral Trading Corp., New York, N. Y.
Reflectal Corp. Subsid., Borg-Warner Corp., Chicago, Ill.
Refractory & Insulation Corp., New York, N. Y. (Mineral wool blanket)
Reynolds Metals Co., Richmond, Va.
Rubatex Div., Great American Industries, Inc., Bedford, Va. (rubber)
Ruberoid Co., New York, N. Y. (Asbestos cellular and laminated sheets or blocks)
Silvercote Products, Inc., Chicago, Ill.
Smith & Kanzler Corp., Linden, N. J. (Asbestos air cell type)
Sprayo-Flake Co., Chicago, Ill.
Spring Packing Corp., Chicago, Ill.
Standard Asbestos Mfg. Co., Chicago, Ill. (Asbestos, hair felt)
Star Woolen Co., Cohoes, N. Y.
Taft Jenkins Co., Inc., Holyoke, Mass.
Thermo-Sound Products, Div. of Kittell-Lacy, Inc., El Monte, Calif. (blanket type)
Tufflite Plastics, Inc., Ballston Spa, N. Y. (low temp.)
United Cork Companies, Kearny, N. J. (Cork)
United States Mineral Wool Co., Stanhope, N. J.
Wilson & Co., Inc., Chicago, Ill.
Wood Conversion Co., St. Paul, Minn.

INSULATION FASTENERS AND ANCHORS

See Fasteners, Insulation

INSULATION, FINISHING CEMENT

Baldwin-Hill Co., Trenton, N. J.
Bigelow Liptak Corp., Detroit, Mich.
Carey Mfg. Co., Philip, Lockland, Cincinnati, O.
Eagle-Picher Co., Cincinnati, O.
Ehret Magnesia Mfg. Co., Valley Forge, Pa. (calcium silicate)
Forty-Eight Insulations, Inc., Aurora, Ill.
Grant Wilson, Inc., Chicago, Ill.
Johns-Manville, New York, N. Y.
Keasbey & Mattison Co., Ambler, Pa.
Moore Inc., Goodloe E., Danville, Ill.
Mundet Cork Corp., N. Bergen, N. J. (mineral wool)
National Cork Co., Englewood, N. J.
Nicolet Industries, Inc., Hamilton, O. (asbestos)
North American Asbestos Corp., Chicago, Ill.
Refractory & Insulation Corp., New York, N. Y.
Ruberoid Co., New York, N. Y. (asbestos)
St. Clair Rubber Co., Detroit, Mich.
Standard Asbestos Mfg. Co., Chicago, Ill.
United States Mineral Wool Co., Stanhope, N. J.
Urethane Foam Div., Rainbow Industries, Inc., Butler, Pa.

INSULATION, PIPE, AND TUBING

Acme Asbestos Covering & Flooring Co., Chicago, Ill. (magnesia)
American Hair & Felt Co., Chicago, Ill.
Armstrong Cork Co., Lancaster, Pa. (Cork, flexible foamed plastic)
Asbestos Asphalt Insulation Co., Chicago, Ill.
Atlas Mineral Products Co., Mertztown, Pa.
Badham Insulation Co., Inc., Birmingham Ala.

Baldwin-Hill Co., Trenton, N. J. (mineral wool; #100 & #101 pipe covering, 85% magnesia pipe insulation, calcium silicate pipe insulation)
Carey Mfg. Co., Philip, Lockland, Cincinnati, O. (Asbestos, magnesia)
Delaware Insulation Co., Wilmington, Del.
Devices, Inc., A Div. of Miracle Adhesives Corp., Bellmore, N. Y. (prefab polyvinyl pipe insulation and finish)
Dow Chemical Co., The, Midland, Mich.
Eagle-Picher Co., Cincinnati, O. (Mineral wool)
Ehret Magnesia Mfg. Co., Valley Forge, Pa. (magnesia)
Forty-Eight Insulations, Inc., Aurora, Ill.
General Aluminum Supply Co., Kansas City, Mo.
Glo-Brite Products, Inc., Chicago, Ill.
Goodrich Co., B. F., Shelton, Conn. (cellular rubber)
Grant Wilson, Inc., Chicago, Ill. (85% magnesium, air-cell, woolfelt, anti-sweat, frost proof, sponge felt.)
Gustin-Bacon Mfg. Co., Kansas City, Mo. (Molded fine glass fiber)
Hunter Mfg. Co., Aluminum Insulation Div., Bristol, Pa. (reflective)
Industrial Laminates Div., Fabric Distributing Co., New York, N. Y.
Infra Insulation, Inc., New York, N. Y.
Insul-Mastic Corp. of America, Summit, Ill. (asphalt-cork)
International Vermiculite Co., Girard, Ill.
Jarrow Products, Inc., Chicago, Ill. (sponge tubing)
Johns-Manville, New York, N. Y.
Kaylo Div., Owens-Illinois Glass Co., Toledo, O.
Keasbey Co., Robert A., New York, N. Y. (Asbestos and cork) (hair felt on cold side)
Keasbey & Mattison Co., Ambler, Pa. (Asbestos, magnesia)
L.O.F. Glass Fibers Co., Toledo, O.
Lockport Mills, Inc., Lockport, N. Y.
MMM, Inc., Portsmouth, O. (low temperature)
Met-L-Wood Corp., Chicago, Ill. (composition material faced with sheet metal)
Minnesota Mining & Mfg. Co., St. Paul, Minn. (Spray)
Mortell Co., J. W., Kankakee, Ill. (plastic cork)
Mundet Cork Corp., North Bergen, N. J. (85% magnesia, calcium silicate, 100% pure cork)
Munn and Steele, Inc., South Boston, Mass.
Mystik Adhesive Products, Inc., Chicago, Ill.
National Cork Co., Englewood, N. J. (Cork)
Nicolet Industries, Inc., Hamilton, O. (Asbestos)
Norristown Asbestos Div., Nicolet Industries, Inc., Norristown, Pa. (Asbestos, magnesia)
North American Asbestos Corp., Chicago, Ill.
Owens-Corning Fiberglas Corp., Toledo, O. (performer or flexible)
Pabco Industrial Insulations Div., Fibreboard Paper Products Corp., San Francisco, Calif. (85% magnesia; calcium silicate; high temperature)
Pacific States Felt Mfg. Co., Inc., San Francisco, Calif.
Pittsburgh Corning Corp., Pittsburgh, Pa.
Pittsburgh Plate Glass Co., Pittsburgh, Pa.
Poe Co., C. W., Cleveland, O. (mineral wool)
Presstite-Keystone Engineering Products Co., A Div. of American-Marietta Co., St. Louis, Mo. (tape)
Rector Mineral Trading Corp., New York, N. Y.
Reflectal Corp. Subsid., Borg-Warner Corp., Chicago, Ill (foil and corrugated paper)
Rhopac, Inc., Skokie, Ill.
Robinson Industries, Coleman, Mich. (expanded plastic)
Rubatex Div., Great American Industries, Inc., Bedford, Va. (rubber)
Ruberoid Co., New York, N. Y. (Asbestos, calsilite)
Smith & Kanzler Corp., Linden, N. J. (Asbestos air cell, wool felt and hair felt)
Spring Packing Corp., Chicago, Ill. (asphaltic)
Standard Asbestos Mfg. Co., Chicago, Ill.
Surface Chemicals, Inc., McKees Rock, Pa.
Taft Jenkins Co., Inc., Holyoke, Mass.
Tufflite Plastics, Inc., Ballston Spa, N. Y. (low temp.)
United Cork Companies, Kearny, N. J.
Uni-Crest Div., United Cork Companies, Kearny, N. J.
United States Rubber Co., New York, N. Y. (asbestos)
Virginia Smelting Co., West Norfolk, Va.
Walker Jamar Co., Duluth, Minn.
Wilson & Co., Chicago, Ill. (hairfelt)
Wood Conversion Co., St. Paul, Minn.
Wrap-On Co., Chicago, Ill. (Glass fiber and flexible tape)
Zippertubing Co., Los Angeles, Calif.

INSULATION, PIPE, UNDERGROUND

American Gilsonite Co., Salt Lake City, Utah
Barrett Div., Allied Chemical & Dye Corp., New York, N. Y.
Durant Insulated Pipe Co., E. Palo Alto, Calif.
Durant Insulated Pipe Co., Inc., Williamstown, N. J.
Insul-Fil Co., Inc., Div. Miracle Adhesives Corp., Bellmore, Long Island, N. Y.
Mearlcrete Div., Mearl Mfg. Corp., Roselle Park, N. J.
Minnesota Mining & Mfg. Co., St. Paul, Minn.
Owens-Corning Fiberglas Corp., Toledo, O.
Pittsburgh Corning Corp., Pittsburgh, Pa.
Pittsburgh Plate Glass Co., Pittsburgh, Pa.
Porter & Co., Inc., H. W., Newark, N. J.
Ric-wiL, Inc., Barberton, O. (hot or cold)
Temploc, Inc., Baldwin Park, Calif.
Tufflite Plastics, Inc., Ballston Spa, N. Y. (low temp.)
Ziegler & Co., G. S., Great Neck, N. Y.
Zonolite Co., Chicago, Ill.

INTAKES FOR OUTDOOR AIR, WALL OR ROOF, EQUIPPED WITH FILTERS

Atmos Corp., Chicago, Ill.

IONIZATION APPARATUS

General Electric Co., Apparatus Sales Div., Schenectady, N. Y.
Ionaire, Inc., San Francisco, Calif.
Montgomery Bros., San Francisco, Calif.
Welsbach Corp., The, Kitson Valve Div., Philadelphia, Pa.
Wesix Electric Heater Co., San Francisco, Calif.

IRON BODY VALVES

See Valves, Gate; and Valves, Globe

ISOTOPES, RADIOACTIVE, FOR DETECTING LEAKS IN PIPING AND HEATING SYSTEMS

American Gas & Chemicals, Inc., Leak-Tec Div., New York, N. Y.
Tracerlab, Inc., Waltham, Mass.

JACKETED PIPE

See Pipe, Jacketed

JACKETING FOR PIPE INSULATION

See Protectors, Pipe Covering

JETS, OVERFIRE AIR, FOR SMOKE ABATEMENT

Canton Stoker Corp., Canton, O.
Eclipse Fuel Engineering Co., Rockford, Ill.
McNeill Smoke Eliminator Co., Chicago, Ill.
North American Mfg. Co., Cleveland, O.
Sterns-Flinn Corp., New York, N. Y.

JOINTS, PIPE, ELECTRICAL INSULATING

Dresser Mfg. Div., Dresser Industries, Inc., Bradford, Pa.
Union Malleable Mfg. Co., Ashland, O.
Universal Controls Corp., Dallas, Tex.

JOINTS, PIPE, EXPANSION, FOR BASEBOARD HEATING

American Tube Products, Inc., West Warwick, R. I.
Beacon Brass Co., Waltham, Mass.
Clifford Mfg. Co., Div. of Standard-Thomson Corp., Waltham, Mass.
Cook Electric Co., Chicago, Ill.
Flexonics Corp., Maywood, Ill.
Fulton Sylphon Div., Robertshaw-Fulton Controls Co., Knoxville, Tenn.
Hoffman Specialty Mfg. Corp., Indianapolis, Ind.
Nibco, Inc., Elkhart, Ind.
U. S. Flexible Metallic Tubing Co., Los Angeles, Calif.
Webster & Co., Warren, Camden, N. J.
Zallea Brothers, Wilmington, Del.

JOINTS, PIPE, EXPANSION, PACKLESS, METAL

Adsco Div., Yuba Consolidated Industries, Inc., Buffalo, N. Y.
American Boa, Inc., New York, N. Y.
American Flow Control Corp., Houston, Tex.
Badger Fire Extinguisher Co., Methuen, Mass.
Badger Mfg. Co., Cambridge, Mass.
Clifford Mfg. Co., Div. of Standard-Thomson Corp., Waltham, Mass.
Cook Electric Co., Chicago, Ill.
Croll-Reynolds Engineering Co., Inc., New York, N. Y.
Finn & Co., Inc., T. R., Hawthorne, N. J.
Flexonics Corp., Maywood, Ill.
Flexrock Co., Philadelphia, Pa.
Fulton Sylphon Div., Robertshaw-Fulton Controls Co., Knoxville, Tenn.
Harris & Co., Arthur, Chicago, Ill.
Kopperman & Sons, Inc., Joseph, Philadelphia, Pa.
Marquette Coppersmithing Co., Philadelphia, Pa.
National Valve & Mfg. Co., Pittsburgh, Pa.
Ric-wiL, Inc., Barberton, O.
Rotherm Engineering Co., Inc., Chicago, Ill.
Semet-Solvay Engineering Div., Allied Chemical Corp., New York, N. Y.
Solar Aircraft Co., San Diego, Calif.
Techniflex Corp., Port Jervis, N. Y.
U. S. Flexible Metallic Tubing Co., Los Angeles, Calif.
Zallea Brothers, Wilmington, Del.

JOINTS, PIPE, EXPANSION, PACKLESS, PLASTIC

Garlock Packing Co., The, Palmyra, N. Y. (teflon)
United States Gasket Co., Camden, N. J.

JOINTS, PIPE, EXPANSION, PACKLESS, RUBBER

American Flow Control Corp., Houston, Tex.
Anchor Packing Co., Philadelphia, Pa.
Garlock Packing Co., Palmyra, N. Y. (spool type & U type)
General Rubber Corp., Tenafly, N. J.
Goodall Rubber Co., Trenton, N. J.
Goodrich Industrial Products Co., B. F., Akron, O.
LaFavorite Rubber Mfg. Co., Hawthorne, N. J.
Mercer Rubber Co., Hamilton Sq., N. J.
Saussé & Co., M. W., Los Angeles, Calif.
United States Rubber Co., New York, N. Y.
Vibration Mountings, Inc., Corona, Ill.

JOINTS, PIPE, EXPANSION, SLIP

Adsco Div., Yuba Consolidated Industries, Inc., Buffalo, N. Y.
American Flow Control Corp., Houston, Tex.
Badger Fire Extinguisher Co., Methuen, Mass.
Baker & Co., R. H., Los Angeles, Calif.
Clow & Sons, Inc., James B., Chicago, Ill.
Crane Co., Chicago, Ill.
Dresser Mfg. Div., Dresser Industries, Inc., Bradford, Pa.
Moran Flexible Joint Co., Div. of Railroad Products Co., Cincinnati, O.
Multiplex Mfg. Co., Berwick, Pa.
Nibco, Inc., Elkhart, Ind.
Parks-Cramer Co., Fitchburg, Mass. (jacketed)
Powell Co., Wm., Cincinnati, O.
Q-P Mfg. Co., Needham Heights, Mass.
Rotherm Engineering Co., Inc., Chicago, Ill.
Royalton Co., Inc., Gasport, N. Y.
Semet-Solvay Engineering Div., Allied Chemical Corp., New York, N. Y.
Smith-Blair, Inc., S. San Francisco, Calif.
Tube Turns Plastics, Inc., Louisville, Ky. (injection molded PVC)
Walworth Co., New York, N. Y.
Webster & Co., Warren, Camden, N. J.
Yarnall-Waring Co., Philadelphia, Pa.
Zurn Industries, Inc., Erie, Pa.

JOINTS, PIPE, FLEXIBLE, SWING AND REVOLVING

Barco Mfg. Co., Barrington, Ill.
Bordo Co., Inc., L. J., Glenside, Pa.
Chiksan Co., Brea, Calif.
Detroit Controls Div., American-Standard, Stratford, Conn.
Finn & Co., Inc., T. R., Hawthorne, N. J.
Flexo Supply Co., Inc., St. Louis, Mo.
Johnson Corp., The, Three Rivers, Mich.
Jordan Corp., Div. of OPW Corp., Cincinnati, O.
Moran Flexible Joint Co., Div. of Railroad Products Co., Cincinnati, O.
OPW Corp., Cincinnati, O.
Perfecting Service Co., Charlotte, N. C.
Pittsburgh Brass Mfg. Co., Pittsburgh, Pa.
Powell Co., Wm., Cincinnati, O.
Rotherm Engineering Co., Inc., Chicago, Ill.
Sealol Corp., Providence, R. I.
Seamlex Co., Inc., Long Island City, N. Y.
Spincraft, Inc., Milwaukee, Wis.
Winkler & Sons, Inc., A. E., Milwaukee, Wis.

JOINTS, UNIVERSAL, FOR OPERATING VALVES

Blood Brothers Machine Div., Rockwell Spring and Axle Co., Allegan, Mich.
Brooks Equipment Corp., Hoboken, N. J.
Chicago Die Casting Mfg. Co., Chicago, Ill.
Clark Flexible Link Shaft Co., Newton Highlands, Mass.
Condenser Service & Engineering Co., Inc., Hoboken, N. J.
Lovejoy Flexible Coupling Co., Chicago, Ill.
Piezo Mfg. Corp., Staten Island, N. Y.
Stow Mfg. Co., Binghamton, N. Y.

KATA THERMOMETERS

See Thermometers, Kata

KITS, COMBUSTION TESTING

Bacharach Industrial Instrument Co., Pittsburgh, Pa.
Davis Instruments, Div. of Davis Emergency Equipment Co., Inc., Newark, N. J.
Dwyer Mfg. Co., F. W., Michigan City, Ind.
Ellison Draft Gage Co., Chicago, Ill.
G. M. Mfg. Co., New York, N. Y.
Hays Corp., Michigan City, Ind.
Victory Engineering Corp., Union, N. J.

KITS, REPAIR FOR PIPES, TANKS, VALVES, FLANGES, AND DUCTS

Arco Products, Automotive Rubber Co., Detroit, Mich.
Chemical Coatings & Engineering Co., Media, Pa.
Devcon Corp., Danvers, Mass.

LACQUERS

See Enamels and Lacquers

LAGGING ADHESIVES

See Adhesives, for Pipe Covering

LAMPS, STERILIZING, FOR DUCT INSTALLATION

Cooper Hewitt Electric Co., Div. of Sperti-Faraday, Inc., Hoboken, N. J.
Fuller Co., D. William, Chicago, Ill.
General Electric Co., Large Lamp Dept., Nela Park, Cleveland, O.
Hanovia Lamp Div., Engelhard Industries, Inc., Newark, N. J.
Sampson Scientific Co., Div. of the Sampson Chemical & Pigment Corp., Chicago, Ill.
Sperti Faraday, Inc., Hoboken, N. J.
Westinghouse Electric Corp., Lamp Div., Bloomfield, N. J.

LEAD PIPE

See Pipe and Tubing, Lead and Lead Alloy

LEAD SHEETS

See Sheets, Lead

LEAD TUBING

See Pipe and Tubing, Lead and Lead Alloy

LEAK DETECTORS

See Detectors, Leak, Refrigerant; Detectors, Leak, Underground Piping; Isotopes, Radioactive

LEATHER PACKING

See Packing, Leather

LIFT GATES AND LIFT TRUCKS

See Gates, Lift; Trucks, Lift

LIGHTS, PILOT AND SIGNAL

Allen-Bradley Co., Milwaukee, Wis.
Benjamin Electric Mfg. Co., Des Plaines, Ill.
Cutler-Hammer, Inc., Milwaukee, Wis.
Dialight Corp., Brooklyn, N. Y.
General Electric Co., Construction Materials Div., Bridgeport, Conn.
General Electric Co., Large Lamp Dept., Nela Park, Cleveland, O.
General Electric Co., Wiring Device Dept., Providence, R. I.
Hart Mfg. Co., The, Hartford, Conn.
Hubbell Corp., Mundelein, Ill. (for solenoid valves)
Kulka Electric Corp., Mt. Vernon, N. Y.
Pyle-National Co., The, Chicago, Ill.
Roberts-Gordon Appliance Corp., Buffalo, N. Y.
Square D Co., Industrial Controller Div., Milwaukee, Wis.
Westinghouse Electric Corp., Pittsburgh, Pa.

LINE-UP PINS FOR FLANGES

See Pins, for Flange Line-Up

LININGS, TANK

Amercoat Corp., South Gate, Calif.
Arco Products, Automotive Rubber Co., Detroit, Mich.
Argo Plastic Products, Cleveland, O.
Atlas Mineral Products Co., Mertztown, Pa.
Bishopric Products Co., Cincinnati, O.
Caldwell Co., W. E., Louisville, Ky.
Carboline Co., The, St. Louis, Mo.
Chemical Coatings & Engineering Co., Media, Pa.
Colonial Plastics Mfg. Co., Industrial Div., Cleveland, O. (plastic)
Corite Products, Inc., Chicago, Ill. (plastic)
Corrosion Control Co., Inc., New York, N. Y.
Elastic Porcelain Lining Corp., Rochester, N. Y.
Ellicott Fabricators, Inc., Baltimore, Md.
Emjay Maintenance Engineers, Rutherford, N. J.
Gates Engineering Co., Wilmington, Del.
Goodrich Industrial Products Co., B. F., Akron, O.
Heil Process Equipment Corp., Cleveland, O.
Heresite & Chemical Co., Manitowoc, Wis. (Pure phenolic baking type; synthetic rubber, sheet and liquid)
Industrial Filter & Pump Co., Chicago, Ill.
Interchemical Corp., Finishes Div., Newark, N. J.
Kaykor Industries, Inc., Yardville, N. J.
Knapp Mills, Inc., Long Island City, N. Y. (lead)
Knight, Maurice A., Akron, O.
LaFavorite Rubber Mfg. Co., Hawthorne, N. J.
Lithcote Corp., Melrose Park, Ill.
Mercer Rubber Co., Hamilton Sq., N. J.
Metal & Thermit Corp., Rahway, N. J.
Nazar Rubber Co., Toledo, O.
Norwood Associated Engineers, Inc., Springfield, Mass.
Patterson-Kelley Co., Inc., The, E. Stroudsburg, Pa. (cement)
Porce-Lin Tank Lining Co., Detroit, Mich.
Steelcote Mfg. Co., St. Louis, Mo.
United States Rubber Co., New York, N. Y.
Wagner Bros., Inc., Equipment Div., Detroit, Mich.
Wilbur & Williams Co., Brighton, Mass. (acid caustic band tank lining system)

LINKS, FUSIBLE

Grinnell Co., Inc., Providence, R. I.
Hodgman Mfg. Co., Inc., Taunton, Mass.
Morse-Smith-Morse Co., Watertown, Mass.
Parish Co., New Orleans, La.
Preferred Utilities Mfg. Corp., New York, N. Y.

LIQUID LEVEL GAGES

See Gages, Liquid Level

LIQUID LEVEL INDICATORS

See Indicators, Liquid Level

LIQUID LEVEL RECORDERS

See Recorders, Liquid Level

LIQUID LEVEL REGULATORS

See Regulators, Liquid Level

LIQUID PRESSURE REGULATORS

See Regulators, Pressure, Liquid

LOCATORS, PIPE, WALL AND UNDERGROUND

Fisher Research Laboratory, Inc., Palo Alto, Calif.
Gardiner Electronics Co., Phoenix, Ariz.
Wilkinson Products Co., Pasadena, Calif.

LOCK FORMING MACHINES

See Machines, Pittsburgh Lock Forming

LOCK NUTS

See Nuts, Lock

LOUVERS AND SHUTTERS, AUTOMATICALLY OR MANUALLY CONTROLLED

Acme Engineering & Mfg. Corp., Muskogee, Okla.
Aerovent Fan Co., Inc., Piqua, O.
Air Conditioning Engineering Co., Cambridge, Mass.
Air Conditioning Products Co., Detroit, Mich.
Airjet Ventilator Co., San Clemente, Calif.
Airmaster Corp., Chicago, Ill.
Air-Path Products Co., Baltimore, Md.
Air & Refrigeration Corp., New York, N. Y.
Allen Cooler & Ventilator, Inc., Rochester, Mich.
American Coolair Corp., Jacksonville, Fla.
American Foundry & Furnace Co., Bloomington, Ill.
American Metal Works, Inc., New Orleans, La.
American Steel Band Co., Pittsburgh, Pa.
American Warming & Ventilating Co., Toledo, O.
Ammerman Co., Inc., Stillwater, Minn.
Arex Co., Chicago, Ill
Atcor, Inc., Warren, Mich.
Atmos Corp., Chicago, Ill.
Barber-Colman Co., Rockford, Ill.
Belco Industries, Inc., St. Louis, Mo.
Biersach & Niedermeyer Co., Milwaukee, Wis.
Brisk Metal Products, New York, N. Y.
Buensod-Stacey, Inc., New York, N. Y.
Buffalo Forge Co., Buffalo, N. Y.
Burt Mfg. Co., Akron, O.
Cain Mfg. Co., Birmingham, Ala.
Champion Blower & Forge Co., Lancaster, Pa
Colt Ventilation of America, Inc., Los Angeles, Calif.
Commercialaire Corp. of America, Brooklyn, N. Y.
Construction Specialties, Inc., Cranford, N. J.
Controlair Mfg. Co., Los Angeles, Calif.
Cook Co., Loren, Berea, O.
De Bothezat Fans Div., American Machine & Metals, Inc., East Moline, Ill.
Detroit Float & Stamping Co., Detroit, Mich.
Dual-Air Fan Co., Hampshire, Ill.
Duro-Dyne Corp., Farmingdale, Long Island, N. Y.
Electrovent Fan & Mfg. Co., Chicago, Ill.
Elgo Shutter & Mfg. Co., Detroit, Mich.
Empire Ventilation Equipment Co., Long Island City, N. Y.
Frigid, Inc., Brooklyn, N. Y.
General Blower Co., Morton Grove, Ill
Herman Nelson Products, American Air Filter Co., Inc., Louisville, Ky.
Hunter Div., Robbins & Myers, Inc., Memphis, Tenn.
Ilg Electric Ventilating Co., Chicago, Ill.
Imperial Damper Co., New York, N. Y.
Independent Register Co., Cleveland, O.
International Engineering, Inc., Dayton, O.
Jordan & Co., Inc., Paul R., Indianapolis, Ind.
Lakewood Engineering & Mfg. Co., Chicago, Ill.
Lemlar Mfg. Co., Gardena, Calif.
Maple City Furnace Co., Monmouth, Ill.
Martin Fan & Blower Co., Chicago, Ill.
Meier Electric & Machine Co., Inc., Indianapolis, Ind.
Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.
Muckle Mfg. Co., Owatonna, Minn.
Murray Co. of Texas, The, Atlanta, Ga.
Peerless Electric Co., Warren, O.

Power Line Fan Co., Inc., Subsidiary of Chelsea Products, Inc., Plainfield, N. J.
Reed Unit-Fans, Inc., New Orleans, La.
Register & Grille Mfg. Co., Inc., Brooklyn, N. Y.
Rittling Corp., The, Buffalo, N. Y.
Robertson Co., H. H., Pittsburgh, Pa.
Senrac Industries, Madison, Wis.
Signal Electric Div. of King-Seeley Corp., Menominee, Mich.
Sioux Steel Co., Sioux Falls, S. D.
Standard Stamping & Perforating Co., Chicago, Ill.
Swartwout Co., The, Cleveland, O.
Tuttle & Bailey, Div. of Allied Thermal Corp., New Britain, Conn.
United Sheet Metal Co., Inc., Columbus, O.
United States Gypsum Co., Chicago, Ill.
United States Register Co., Battle Creek, Mich.
Uno Ventilator Co., Malden, Mass.
Van Noorden Co., E., Boston, Mass.
Ventilouvre Co., Inc., The, Marietta, O.
Vinco Products, Inc., Glastonbury, Conn.
Whirlwind Mfg. Co., Houston, Tex.
Wing Mfg. Co., L. J., Div. of Aero Supply Mfg. Co., Inc., Linden, N. J.
Young Regulator Co., Cleveland, O.

LOUVERS, SUN REFLECTING

American Warming & Ventilating Co., Toledo, O.
Atmos Corp., Chicago, Ill.
Construction Specialties, Inc., Cranford, N. J.
Kewaneer Co., Niles, Mich.
Lemlar Mfg. Co., Gardena, Calif.

LOW WATER CUT-OFFS

See Cut-offs, Low Water, Heating Boiler

LUBRICANTS, VALVE STEM

Armite Laboratories, Los Angeles, Calif.
Dixon Crucible Co., Joseph, Jersey City, N. J.
Electrofilm, Inc., N. Hollywood, Calif.
Gulf Oil Corp., Pittsburgh, Pa.
Jet-Lube, Inc., Burbank, Calif.
Union Carbide Chemicals Co., Div. of Union Carbide Corp., New York, N. Y.

MACHINES, BALANCING

See Equipment, Balancing

MACHINES, BLUE PRINT AND WHITE PRINT

For Reproducing Engineering Drawings

American Photocopy Equipment Co., Chicago, Ill. (for photocopy work)
Bruning Co., Inc., Charles, Chicago, Ill.
Dietzgen Co., Eugene, Chicago, Ill.
Ozalid Div. of General Aniline & Film Corp., Johnson City, N. Y.
Paragon-Revolute Corp., Rochester, N. Y.
Pease Co., C. F., The, Chicago, Ill.
Reproduction Engineering Corp., Ivorytown, Conn.

MACHINES AND FILM, X-RAY

Balteau Electric Corp., Stamford, Conn.
du Pont de Nemours & Co., E. I., Photo Products Dept., Wilmington, Del. (film only)
Eastman Kodak Co., Rochester, N. Y.
General Electric Co., X-Ray Dept., Milwaukee, Wis.
Keleket X-Ray Corp., Waltham, Mass.
Mitchell Radiation Products Corp., Norristown, Pa.
Philips Electronics, Inc., Mt. Vernon, N. Y.
Picker X-Ray Co., White Plains, N. Y.
Westinghouse Electric Corp., Pittsburgh, Pa.

MACHINES, FLARING, PIPE AND TUBE

Chicago Pneumatic Tool Co., New York.
Hill, Inc., Walter P., Detroit, Mich.
Leonard Precision Products Co., Santa Ana, Calif.
Wilson Co., K. R., Arcade, N. Y.

MACHINES, PIPE CLEANING

Continental Machine Co., Chicago, Ill.
Fennelly Co., J. C., San Francisco, Calif.
Homestead Valve Mfg. Co., Coraopolis, Pa.
Hydraulic Mfg. Co., Bridgeport, Conn.
Plicoflex, Inc., Los Angeles, Calif.
Spartan Tool Co., Chicago, Ill.
Stockmeister and Prins, Wellston, O.
Wilson, Inc., Thomas C., Long Island City, N. Y.

MACHINES, PIPE CUTTING AND THREADING, PORTABLE

Armstrong Bros. Tool Co., Chicago, Ill.
Beaver Pipe Tools, Inc., Warren, O.
Collins Machinery Corp., Los Angeles, Calif.
Continental Machine Co., Chicago, Ill.
H & M Pipe Beveling Machine Co., Tulsa, Okla.
Kalamazoo Tank & Silo Co., Machine Tool Div., Kalamazoo, Mich.
Landis Machine Co., Inc., Waynesboro, Pa.
Muncie Gear Wks., Inc., Muncie, Ind.
Obear & Son, W. F., Inglewood, Calif.
Oster Mfg. Co., Wickliffe, O.
Pilot Mfg. Co., Torrance, Calif.
Ridge Tool Co., Elyria, O.
Skil Corp., Chicago, Ill.
Thread-Ezy Mfg. Co., Corunna, Mich.
Toledo Pipe Threading Machine Co., Toledo, O.
Velocity Power Tool Co., Div. of Mine Safety Appliances Co., Pittsburgh, Pa.
Wachs Co., E. H., The, Chicago, Ill.
Williamson, Inc., T. D., Tulsa, Okla.

MACHINES, PIPE CUTTING AND THREADING, STATIONARY

Beaver Pipe Tools, Inc., Warren, O.
Bignall & Keeler Div., John Ramming Machine Co., St. Louis, Mo.
Collins Machinery Corp., Los Angeles, Calif.
Continental Machine Co., Chicago, Ill.
Krieg, Inc., Victor J., New York, N. Y.
Landis Machine Co., Inc., Waynesboro, Pa.
Obear & Son, W. F., Inglewood, Calif.
Oster Mfg. Co., Wickliffe, O.
Pilot Mfg. Co., Torrance, Calif.
Ridge Tool Co., Elyria, O.
Saunders Mfg. Co., Yonkers, N. Y.
Stratford Pipe Scalloper Co., Clearwater, Fla.
Toledo Pipe Threading Machine Co., Toledo, O.

MACHINES, PIPE, FOR WELDING, CUTTING, AND FITTING

Beaver Pipe Tools, Inc., Warren, O.
H & M Pipe Beveling Machine Co., Tulsa, Okla.
Peck & Co., Cecil C., Cleveland, O.
Porter Co., R. C., Cincinati, O.
Vernon Tool Co., Ltd., Alhambra, Calif.

MACHINES, PITTSBURGH LOCK FORMING

Bell Machine Specialties, Trevose, Pa.
Birks Mfg. Co., Meridan, Conn. (Pittsburgh lock seam opener)
Lockformer Co., Chicago, Ill.
Maplewood Machinery Co., Inc., Chicago, Ill.
Milton Equipment Co., Philadelphia, Pa. (sheet metal working machine)
Milwaukee Electric Tool Corp., Milwaukee, Wis.
Niagara Machine & Tool Wks., Buffalo, N. Y.
Port City Machine & Tool Co., Muskegon, Mich.
Speed-Seam Co., Chicago, Ill.

MACHINES, REFRIGERATION, ABSORPTION

Arkla Air Conditioning Corp., Little Rock, Ark.
Carrier Corp., Syracuse, N. Y.
York Corp., Subsidiary of Borg-Warner Corp., York, Pa.

MACHINES, SLIP ROLL FORMING

Barth Engineering & Mfg. Co., Inc., Milldale, Conn.
Bertsch & Co., Inc., Cambridge City, Ind.
Hendley & Whitmore Co., Beloit, Wis.
Maplewood Machinery Co., Inc., Chicago, Ill.
Milton Equipment Co., Philadelphia, Pa.
Niagara Machine & Tool Wks., Buffalo, N. Y.
O'Neil-Irwin Mfg. Co., Lake City, Minn.
Peck, Stow & Wilcox Co., Southington, Conn.
San Angelo Foundry & Machine Co., San Angelo, Tex.
Webb Corp., The, Webb City, Mo.
Wysong & Miles, Inc., Greensboro, N. C.

MACHINES, TESTING, WELD

Air Reduction Sales Co., A Div. of Air Reduction Co., Inc., New York, N. Y.
Dillon & Co., Inc., W. C., Van Nuys, Calif.
Olsen Testing Machine Co., Tinius, Willow Grove, Pa.

MACHINES, TRENCHING, FOR PIPE LINES

Auburn Machine Works, Inc., Auburn, Nebr.
Clipper Mfg. Co., Kansas City, Mo.
Eveready Briksaw Co., Kansas City, Mo.
Parsons Co., Div. of Koehring Co., Newton, Ia.

MACHINES, TUBE FINNING

United Machinery Sales Co., Chicago, Ill.

MAGNESIUM ALLOY SHEETS

See Sheets, Magnesium Alloy

MAGNESIUM TUBING

See Tubing, Magnesium

MALLEABLE UNIONS

See Unions, Malleable

MANIFOLDS AND HEADERS, PREFABRICATED, FOR HEATING SYSTEMS

Acheson Mfg. Co., Rankin, Pa.
Atlantic Pipe Bending & Fabricating Corp., Moonachie, N. J.
Crane Co., Chicago, Ill.
Dunham-Bush, Inc., West Hartford, Conn.
Econo Products Co., Inc., Div. of Viking Instruments, Inc., East Haddam, Conn.
Kenmore Machine Products, Inc., Lyons, N. Y.
Milwaukee Valve Co., Milwaukee, Wis.
Ohio Brass Co., Mansfield, O.
Panel Heat, Inc., Copiague, N. Y.
Shaw-Kendall Engineering Co., Toledo, O.
Super Radiator Corp., Minneapolis, Minn.
Thrush & Co., H. A., Peru, Ind.
Webster & Co., Warren, Camden, N. J.

MANIFOLDS, REFRIGERATION

Frick Co., Waynesboro, Pa.
Henry Valve Co., Melrose Park, Ill.
Imperial Brass Mfg. Co., Chicago, Ill.
Kenmore Machine Products, Inc., Lyons, N. Y.
Kerotest Mfg. Co., Pittsburgh, Pa.
Mueller Brass Co., Port Huron, Mich.
Reco Products Div., Recony Corp., New York.
Refrigeration Research, Inc., Brighton, Mich.
Super Radiator Corp., Minneapolis, Minn.
Superior Valve and Fittings Co., Pittsburgh, Pa.
Vilter Mfg. Co., Milwaukee, Wis.
York Corp., Subsidiary of Borg-Warner Corp., York, Pa.

MANOMETERS

Airserco Mfg. Co., Inc., Pittsburgh, Pa.
American Meter Co., Inc., Philadelphia, Pa.
Bacharach Industrial Instrument Co., Pittsburgh, Pa.
Bailey Co., Chas. M., San Francisco, Calif.
Bristol Co., The, Waterbury, Conn.
Builders-Providence Div., B-I-F Industries, Inc., Providence, R. I.
Defender Instrument and Regulator Co., Boody, Ill.
Dwyer Mfg. Co., F. W., Michigan City, Ind.
Dynametrics Corp., Burlington, Mass.
Elgin Softener Corp., Elgin, Ill.
Ellison Draft Gage Co., Chicago, Ill.
Fischer & Porter Co., Hatboro, Pa.
Flow Corp., Arlington, Mass. (micro)
Hastings-Raydist, Inc., Hampton, Va.
Hill & Co., E. Vernon, Lake Geneva, Wis.
King Engineering Corp., Ann Arbor, Mich.
Manning, Maxwell & Moore, Inc., Stratford, Conn.
Meriam Instrument Co., The, Cleveland, O.
Minneapolis-Honeywell Regulator Co., Industrial Div., Philadelphia, Pa.
National Instrument Laboratories, Inc., Washington, D. C.
Norwalk Valve Div., Eclipse Fuel Engineering Co., Rockford, Ill.
Scientific Instrument Co., Detroit, Mich.
Simplex Valve & Meter Co., Lancaster, Pa.

Taylor Instrument Companies, Rochester, N. Y.
Trerice Co., H. O., Detroit, Mich.
Trimount Instrument Co., Chicago, Ill.
Uehling Instrument Co., Paterson, N. J.
Wallace & Tiernan Inc., Belleville, N. J.
Will Corp., Rochester, N. Y.

MARKERS, PIPE, HOLE AND SADDLE

Brady Co., W. H., Milwaukee, Wis.
Contour Marker Corp., Compton, Calif.
Jewel Mfg. Co., St. Paul, Minn.
Seton Name Plate Co., New Haven, Conn.

MASONRY ANCHORS

See Anchors, Expansion

MATERIALS HANDLING FANS

See Fans, Materials Handling; Units, Exhauster, Centrifugal Fan

MECHANICAL DRIVE TURBINES

See Turbines, Mechanical Drive

MECHANICAL SPEED CHANGERS

See Changers, Speed, Mechanical

MECHANICAL TRAPS

See Traps, Steam, Mechanical

MERCURY SWITCHES

See Switches, Mercury

METAL HOSE

See Hose, Flexible, Metal and Fittings

METAL, POROUS, FOR FILTRATION, SEPARATION, DIFFUSION AND FLOW CONTROL

Chemiquip Co., New York, N. Y.
Keystone Carbon Co., Inc., St. Marys, Pa.
Moraine Products Div., General Motors Corp., Dayton, O. (porous metals)
Newark Wire Cloth Co., Newark, N. J.
Wabash Corp., Chicago, Ill.

METALLIC BELLOWS

See Bellows, Thermostatic and Metallic

METALLIC PACKING

See Packing, Metallic

METER MANIFOLD ASSEMBLIES

See Assembies, Manifold, for Meters

METERS, AIR VELOCITY, DIRECT READING

Anemostat Corp. of America, New York, N. Y.
Bacharach Industrial Instrument Co., Pittsburgh, Pa.
Dwyer Mfg. Co., F. W., Michigan City, Ind.
Flow Corp., Arlington, Mass.
Hastings-Raydist, Inc., Hampton, Va.
Hill & Co., E. Vernon, Lake Geneva, Wis.
Illinois Testing Laboratories, Inc., Chicago.
Johnson Degree Day Systems, Kalamazoo, Mich.
United Electric Controls Corp., Watertown, Mass.

METERS, BTU, FOR MEASURING FLOW AND TEMPERATURE AND CALIBRATED IN BTU OR THERMS

Air-Conditioning Equipment Corp., New York, N. Y.
American Meter Co., Inc., Philadelphia, Pa.
Bailey Meter Co., Cleveland, O.
Beckman & Whitley, Inc., San Carlos, Calif.
Bristol Co., The, Waterbury, Conn.
Cutler-Hammer, Inc., Milwaukee, Wis.
Foxboro Co., Foxboro, Mass.
Hagan Chemicals & Controls, Inc., Pittsburgh, Pa.
Hays Corp., Michigan City, Ind.
Minneapolis-Honeywell Regulator Co., Industrial Div., Philadelphia, Pa.
Penn Instruments Div. of Burgess-Manning Co., Philadelphia, Pa.

METERS, CONDENSATE

Central Station Steam Co., Detroit, Mich.
Hays Corp., Michigan City, Ind.
Henszey Co., Watertown, Wis.
Neptune Meter Co., New York, N. Y.

METERS, FLOW, GAS OR AIR

Air Conditioning Equipment Corp., New York, N. Y.
American Meter Co., Inc., Philadelphia, Pa.
Barton Instrument Corp., Monterey Park, Calif.
Bristol Co., The, Waterbury, Conn.
Brooks Rotameter Co., Lansdale, Pa.
Builders-Providence Div., B-I-F Industries, Inc., Providence, R. I.
Dahl, G. W., Bristol, R. I.
Defender Instrument & Regulator Co., Boody, Ill.
Dietz Co., Henry G., Long Island City, N. Y.
Dwyer Mfg. Co., F. W., Michigan City, Ind.
Dynametrics Corp., Burlington, Mass.
Eclipse Fuel Engineering Co., Rockford, Ill.
Fischer & Porter Co, Hatboro, Pa.
Foster Engineering Co., Union, N. J.
Foxboro Co., Foxboro, Mass.
Hagan Chemicals & Controls, Inc., Pittsburgh, Pa.
Hastings-Raydist, Inc., Hampton, Va.
Hays Corp., Michigan City, Ind.
Industrial Development Laboratories, Inc., Jersey City, N. J.
King Engineering Corp., Ann Arbor, Mich.
Librascope, Inc., Commercial Div., Burbank, Calif.
Liquid Carbonic Div. of General Dynamics Corp., Chicago, Ill.
Meriam Instrument Co., The, Cleveland, O.
Minneapolis-Honeywell Regulator Co., Industrial Div., Philadelphia, Pa.
National Instrument Laboratories, Inc., Washington, D. C.
Neptune Meter Co., New York, N. Y.
Penn Instruments Div. of Burgess-Manning Co., Philadelphia, Pa.
Republic Flow Meters Co., Chicago, Ill.
Rockwell Mfg. Co., Meter & Valve Div., Pittsburgh, Pa.
Rotron Controls Corp., Woodstock, N. Y.
Schutte & Koerting Co., Cornwells Heights, Bucks County, Pa.
Selas Corp. of America, Dresher, Pa.
Sostman & Co., H. E., Cranford, N. J.
Superior Valve & Fittings Co., Pittsburgh, Pa.
Taylor Instrument Companies, Rochester, N. Y.
Trimount Instrument Co., Chicago, Ill.
Uehling Instrument Co., Paterson, N. J.
Vector Mfg. Co., Inc., Jenkintown, Pa.
Victor Equipment Co., Welding Equipment Div., San Francisco, Calif.

METERS, FLOW, REFRIGERANT

Airserco Mfg. Co., Inc., Pittsburgh, Pa.
Bristol Co., The, Waterbury, Conn.
Brooks Rotameter Co., Landsdale, Pa.
Builders-Providence Div., B-I-F Industries, Inc., Providence, R. I.
Fischer & Porter Co., Hatboro, Pa.
Foxboro Co., Foxboro, Mass.
Hagan Chemicals & Controls, Inc., Pittsburgh, Pa.
Industrial Development Laboratories, Inc., Jersey City, N. J.
Neptune Meter Co., New York, N. Y.
Penn Instruments Div. of Burgess-Manning Co., Philadelphia, Pa.
Schutte & Koerting Co., Cornwells Heights, Bucks County, Pa.
Trimount Instrument Co., Chicago, Ill.

METERS, FLOW, STEAM

American Meter Co., Inc., Philadelphia, Pa.
Bailey Meter Co., Cleveland, O.
Bristol Co., The, Waterbury, Conn.
Brooks Rotameter Co., Lansdale, Pa.
Builders-Providence Div., B-I-F Industries, Inc., Providence, R. I.
Dynametrics Corp., Burlington, Mass.
Fischer & Porter Co., Hatboro, Pa.
Foster Engineering Co., Union, N. J.
Foxboro Co., Foxboro, Mass.
Hagan Chemicals & Controls, Inc., Pittsburgh, Pa.
Hays Corp., Michigan City, Ind.
Henszey Co., Watertown, Wis.
King Engineering Corp., Ann Arbor, Mich.

Mason-Neilan, Div. of Worthington Corp., Norwood, Mass.
Meriam Instrument Co., The, Cleveland, O.
Minneapolis-Honeywell Regulator Co., Industrial Div., Philadelphia, Pa.
National Instrument Laboratories, Inc., Washington, D. C.
Penn Instruments Div. of Burgess-Manning Co., Philadelphia, Pa.
Republic Flow Meters Co., Chicago, Ill.
Rockwell Mfg. Co., Meter and Valve Div., Pittsburgh, Pa.
Rotron Controls Corp., Woodstock, N. Y.
Sostman & Co., H. E., Cranford, N. J.
Taylor Instrument Companies, Rochester, N. Y.
Trimount Instrument Co., Chicago, Ill.

METERS, PROCESS LIQUID

American Meter Co., Inc., Philadelphia, Pa.
Bailey Meter Co., Cleveland, O.
Bristol Co., The, Waterbury, Conn.
Brooks Rotameter Co., Lansdale, Pa.
Buffalo Meter Co., Buffalo, N. Y.
Builders-Providence Div., B-I-F Industries, Inc., Providence, R. I.
Drage Products, Inc., Union City, N. J.
Dynametrics Corp., Burlington, Mass.
Fischer & Porter Co., Hatboro, Pa.
Foxboro Co., Foxboro, Mass.
Gamon Meter Div., Worthington Corp., Newark, N. J.
Granberg Corp., Oakland, Calif.
Hagan Chemicals & Controls, Inc., Pittsburgh, Pa.
Hays Corp., Michigan City, Ind.
Henszey Co., Watertown, Wis.
Hetherington & Berner, Inc., Indianapolis, Ind. (jacketed)
Mason-Neilan, Div. of Worthington Corp., Norwood, Mass.
Meriam Instrument Co., The, Cleveland, O.
Minneapolis-Honeywell Regulator Co., Industrial Div., Philadelphia, Pa.
Neptune Meter Co., New York, N. Y.
Norwood Controls, A Unit of Detroit Controls, Norwood, Mass.
Penn Instruments Div. of Burgess-Manning Co., Philadelphia, Pa.
Republic Flow Meters Co., Chicago, Ill.
Rockwell Mfg. Co., Meter and Valve Div., Pittsburgh, Pa.
Rotron Controls Corp., Woodstock, N. Y.
Schutte and Koerting Co., Cornwells Heights, Bucks County, Pa.
Simplex Valve & Meter Co., Lancaster, Pa.
Smith Corp., A. O., Milwaukee, Wis.
Sostman & Co., H. E., Cranford, N. J.
Swartwout Co., The, Cleveland, O.
Trimount Instrument Co., Chicago, Ill.

METERS, VOLUME, AIR AND GAS

Airserco Mfg. Co., Inc., Pittsburgh, Pa.
American Meter Co., Inc., Philadelphia, Pa.
Bristol Co., The, Waterbury, Conn.
Brooks Rotameter Co., Lansdale, Pa.
Builders-Providence Div., B-I-F Industries, Inc., Providence, R. I.
Defender Instrument & Regulator Co., Boody, Ill.
Dynametrics Corp., Burlington, Mass.
Fischer & Porter Co., Hatboro, Pa.
Foxboro Co., Foxboro, Mass.
Granberg Corp., Oakland, Calif.
Hagan Chemicals & Controls, Inc., Pittsburgh, Pa.
Hastings-Raydist, Inc., Hampton, Va.
Hays Corp., Michigan City, Ind.
Meriam Instrument Co., The, Cleveland, O.
Neptune Meter Co., New York, N. Y.
Penn Instruments Div. of Burgess-Manning Co., Philadelphia, Pa.
Rockwell Mfg. Co., Meter & Valve Div., Pittsburgh, Pa.
Roots-Connersville Blower, Div. of Dresser Industries, Inc., Connersville, Ind.
Schutte and Koerting Co., Cornwells Heights, Bucks County, Pa.
Selas Corp. of America, Dresher, Pa.
Simplex Valve & Meter Co., Lancaster, Pa.
Uehling Instrument Co., Paterson, N. J.
Victor Equipment Co., Welding Equipment Div., San Francisco, Calif.

METERS, WATER

American Moistening Co., Cleveland, N. C.
Brooks Rotameter Co., Lansdale, Pa.
Buffalo Meter Co., Buffalo, N. Y.

Builders-Providence Div., B-I-F Industries, Inc., Providence, R. I.
Dynametrics Corp., Burlington, Mass.
Fischer & Porter Co., Hatboro, Pa.
Foster Engineering Co., Union, N. J.
Foxboro Co., Foxboro, Mass.
Gamon Meter Div., Worthington Corp., Newark, N. J.
Hagan Chemicals & Controls, Inc., Pittsburgh, Pa.
Hays Corp., Michigan City, Ind.
Henszey Co., Watertown, Wis.
Hersey Mfg. Co., Dedham, Mass.
Neptune Meter Co., New York, N. Y.
Penn Instruments Div. of Burgess-Manning Co., Philadelphia, Pa.
Republic Flow Meters Co., Chicago, Ill.
Rockwell Mfg. Co., Meter and Valve Div., Pittsburgh, Pa.
Rotron Controls Corp., Woodstock, N. Y.
Schutte and Koerting Co., Cornwells Heights, Bucks County, Pa.
Worthington Corp., East Orange, N. J.

MIXING VALVES

See Valves, Mixing, Steam and Water

MODULATING VALVES

See Valves, Radiator, Steam and Hot Water Modulating

MOTOR BASES

See Bases, Vibration Isolating, Pad Type; Bases, Vibration Isolating, Spring Type; Bases, Motor Tension Adjusting

MOTOR CONTROLLERS

See Controllers and Starters, Motor

MOTOR OPERATED VALVES

See Valves, Motor Operated

MOTOR-PUMP UNITS

See Pump-Motor Units, Self-Contained

MOTOR STARTERS

See Controllers and Starters, Motor

MOTORS, COMPRESSED AIR POWERED

Airetool Mfg. Co., Springfield, O.
Binks Mfg. Co., Chicago, Ill.
Chicago Pneumatic Tool Co., New York, N. Y.
Detroit Hoist & Machine Co., Detroit, Mich
DeVilbiss Co., The, Toledo, O.
Gardner-Denver Co., Quincy, Ill.
Ingersoll-Rand Co., New York, N. Y.
Joy Mfg. Co., Pittsburgh, Pa.
Leiman Bros., Inc., Newark, N. J.
Powers Regulator Co., Skokie, Ill.

MOTORS, ELECTRIC, FRACTIONAL HP

ACEC Electric Corp., New York, N. Y.
Acro Div., Robertshaw-Fulton Controls Co., Columbus, O.
Airserco Mfg. Co., Inc., Pittsburgh, Pa.
Alliance Mfg. Co., Inc., Alliance, O. (Shaded pole)
Baldor Electric Co., St. Louis, Mo.
Barber-Colman Co., Rockford, Ill.
Bell & Gossett Co., Morton Grove, Ill.
Bluffton Electric Co., Bluffton, Ind.
Bodine Electric Co., Chicago, Ill.
Brown-Brockmeyer Co., Inc., Dayton, O.
Burke Electric Co., Div. of Marathon Electric Mfg. Corp., Erie, Pa.
Century Electric Co., St. Louis, Mo.
Clock & Timer Dept., General Electric Co., Ashland, Mass.
Control Co. of America, Soreng Div., Schiller Park, Ill.
Dayton Electric Mfg. Co., Chicago, Ill.
Delco Products Div., General Motors Corp., Dayton, O.
Diehl Mfg. Co., Finderne Plant, Somerville, N. J.
Doerr Electric Corp., Cedarburg, Wis.
Electric Auto-Lite Co., Instrument & Gauge Div., Toledo, O.
Electric Motors & Specialties, Inc., Garrett, Ind.
Emerson Electric Mfg. Co., The, St. Louis, Mo.
Fairbanks, Morse & Co., Chicago, Ill.
Fasco Industries, Inc., Rochester, N. Y.
Franklin Electric Co., Inc., Bluffton, Ind.
General Electric Co., Apparatus Sales Div., Schenectady, N. Y.
Hansen Mfg. Co., Inc., Princeton, Ind.
Holtzer-Cabot Electric Motor Div., National Pneumatic Co., Inc., Boston, Mass.
Howard Industries, Inc., Racine, Wis. (all types)
Howell Electric Motors Co., Howell, Mich.
Iron Fireman Mfg. Co., Cleveland, O.
Jack & Heintz, Inc., Cleveland, O.
Kingston-Conley, Inc., Div. of the Ohio Electric Mfg. Co., North Plainfield, N. J.
Kurz & Root Co., Appleton, Wis.
Lamb Electric Co., A Div. of American Machine & Metals, Inc., Kent, O.
Leland Electric Co., The, Div. of American Machine & Foundry Co., Dayton, O.
Lima Electric Motor Co., Inc., The, Lima, O.
Lincoln Electric Co., The, Cleveland, O.
Marathon Electric Mfg. Corp., Wausau, Wis.
Marble Electric Corp., Gladstone, Mich.
Marco Electric Mfg. Corp., Womelsdorf, Pa.
Master Electric Co., Div. of Reliance Electric & Engineering Co., Dayton, O.
Minneapolis-Honeywell Regulator Co., Industrial Div., Philadelphia, Pa.
Morrill Motors, Ft. Wayne, Ind.
National Pneumatic Co., Inc., New York, N. Y.
Newman Electric Motors, Inc., Newark, N. J.
Packard Electric Div., General Motors Corp., Warren, O.
Peerless Electric Co., Warren, O.
Portable Electric Tools, Inc., Chicago, Ill.
Redmond Co., Inc., Owosso, Mich.
Reliance Electric & Engineering Co., Cleveland, O.
Reynolds Electric Co., River Grove, Ill.
Ripley Co., Inc., Middletown, Conn.
Robbins & Myers, Inc., Springfield, O.
Safety Industries, Inc., Hamden, Conn.
Small Motors, Inc., Chicago, Ill.
Smith Corp., A. O., Milwaukee, Wis.
Smith Corp., A. O., Electric Motor Div., Tipp City, O.
Speedway Mfg. Co., Div. of Thor Power Tool Co., Chicago (Cicero), Ill.
Sutton Corp., O. A., The, Wichita, Kans.
Thermador Electrical Mfg., Los Angeles, Calif.
U. S. Electrical Motors, Inc., Los Angeles, Calif.
Universal Electric Co., Owosso, Mich.
Wagner Electric Corp., St. Louis, Mo.
Wesche Engineering Co., B. A., Cincinnati, O.
Westinghouse Electric Corp., Pittsburgh, Pa.

MOTORS, ELECTRIC, 1 HP AND OVER

ACEC Electric Corp., New York, N. Y.
Allis-Chalmers Mfg. Co., Milwaukee, Wis.
Allis Co., Louis, The, Milwaukee, Wis.
Baldor Electric Co., St. Louis, Mo.
Bell & Gossett Co., Morton Grove, Ill.
Brook Motor Corp., Chicago, Ill.
Brown-Brockmeyer Co., Inc., Dayton, O.
Burke Electric Co., Div. of Marathon Electric Mfg. Corp., Erie, Pa.
Byron Jackson Pumps, Inc., A Subsidiary of Borg-Warner Corp., Los Angeles, Calif. (submersible)
Century Electric Co., St. Louis, Mo.
Continental Electric Co., Inc., Newark, N. J.
Dayton Electric Mfg. Co., Chicago, Ill.
Delco Products Div., General Motors Corp., Dayton, O.
Diehl Mfg. Co., Finderne Plant, Somerville, N. J.
Doerr Electric Corp., Cedarburg, Wis.
Electric Machinery Mfg. Co., Minneapolis, Minn. (100 hp and over)
Electric Products Co., Cleveland, O.
Electro-Dynamic Div. of General Dynamics Corp., Bayonne, N. J.
Elliott Co., Jeannette, Pa.
Emerson Electric Mfg. Co., The, St. Louis, Mo.
Fairbanks, Morse & Co., Chicago, Ill.
General Electric Co., Apparatus Sales Div., Schenectady, N. Y.
Hertner Electric Co., The, Cleveland, O.
Howell Electric Motors Co., Howell, Mich.
Ideal Electric & Mfg. Co., Mansfield, O.
Imperial Electric Co., Akron, O.
Jack & Heintz, Inc., Cleveland, O.
Kingston-Conley, Inc., Div. of the Ohio Electric Mfg. Co., North Plainfield, N. J.
Leland Electric Co., The, Div. of American Machine & Foundry Co., Dayton, O.
Lima Electric Motor Co., Inc., The, Lima, O.
Lincoln Electric Co., Cleveland, O.
Marathon Electric Mfg. Corp., Wausau, Wis.
Marble Electric Corp., Gladstone, Mich.
Master Electric Co., Div. of Reliance Electric & Engineering Co., Dayton, O.
Moore Co., The, Marceline, Mo. (Slow speed fan motors)
Newman Electric Motors, Inc., Newark, N. J.
Peerless Electric Co., Warren, O.
Reliance Electric & Engineering Co., Cleveland, O.
Reuland Electric Co., Alhambra, Calif.
Robbins & Myers, Inc., Springfield, O.
Smith Corp., A. O., Milwaukee, Wis.
Smith Corp., A. O., Electric Motor Div., Tipp City, O.
Star-Kimble Electric Co., Div. of Safety Industries, Inc., Hamden, Conn.
Sterling Electric Motors, Inc., Los Angeles, Calif.
U. S. Electrical Motors, Inc., Los Angeles.
Wagner Electric Corp., St. Louis, Mo.
Wesche Engineering Co., B. A., Cincinnati, O.
Westinghouse Electric Corp., Pittsburgh, Pa.

MOUNTINGS, VIBRATION

See Bases, Vibration Isolating, Pad Type; Bases, Vibration Isolating, Spring Type

MUFFLERS, HOT GAS, FOR REFRIGERANT LINES

Aminco Refrigeration Products, American Injector Co., Detroit, Mich.
Dunham-Bush, Inc., West Hartford, Conn.
International Aer Acoustics, New York, N. Y.
McIntire Co., The, Livingston, N. J.
Refrigeration Research, Inc., Brighton, Mich.
Temprite Products Corp., Dept. HPAC, Birmingham, Mich.
Weatherhead Co., The, Ft. Wayne Div., Ft. Wayne, Ind.

MUSHROOM HEATERS

See Heaters, Steam Jet, for Liquids

MUSHROOM VENTILATORS

See Ventilators, Mushroom

NAMEPLATES, STOCK WORDING FOR IDENTIFYING HEATING, PIPING AND AIR CONDITIONING EQUIPMENT AND CONTROLS

Atlantic Engravers, Inc., Amityville, N. Y.
Brady Co., W. H., Milwaukee, Wis. (self-bonding)
Gray Pantograph Engraving Co., Hoboken, N. J.
Metalcraft, Inc., Mason City, Ia.
Meyercord Co., The, Chicago, Ill.
New Hermes Engraving Machine Corp., New York, N. Y. (machine for marking plastic legend plates)
North Shore Nameplate Inc., Bayside, N. Y.
Pee Cee Tape & Label Co., Los Angeles, Calif.
Seton Name Plate Co., New Haven, Conn.
Southern Name Plate Shop, New Orleans, La.

NEUTRALIZERS, ACID

See Dehydrant and Acid Neutralizer

NEUTRALIZERS, ODOR

See Adsorbers, Odor, for Duct Systems

NICKEL AND NICKEL ALLOY PIPE AND FITTINGS

See Tubing, Nickel and Alloy; Fittings, Pipe, Nickel and Nickel Alloy; Pipe, Nickel and Nickel Alloy

NICKEL AND NICKEL ALLOY SHEETS

See Sheets, Nickel and Nickel Alloy

NIPPLES, PIPE, BRASS AND COPPER

Acheson Mfg. Co., Rankin, Pa.
Aeroquip, Inc., Van Wert, O.
Afco Fitting Co., Div. of Curtis Mfg. Co., Cleveland, O.
Allen Mfg. Co., W. D., Bellwood, Ill.

American Sanitary Mfg. Co., Abingdon, Ill.
Anderson Brass Co., Detroit, Mich.
Anderson Metals Corp., Kansas City, Mo.
Capitol Mfg. & Supply Co., Columbus, O.
Chase Brass & Copper Co., Waterbury, Conn.
Chicago Nipple Mfg. Co., Oak Park, Ill. (also chrome plated)
Cobra Metal Hose Div., D-K Mfg. Co., Chicago, Ill.
Couplings Co., Chicago, Ill.
Crane Co., Chicago, Ill.
G & H Mfg. Co., Philadelphia, Pa.
Gilbert Brass Foundry Co., St. Louis, Mo.
Imperial Brass Mfg. Co., Chicago, Ill.
Keeney Mfg. Co., Newington, Conn.
Ladish Co., Cudahy, Wis.
Madden Brass Products Co., Aurora, Ill.
Mueller Brass Co., Port Huron, Mich.
New York Brass Foundry, New York, N.Y.
Pacific Fittings Div., General Metals Corp., Hollydale, Calif.
Pittsburgh Nipple Wks., Inc., Pittsburgh, Pa.
Ra-Rich Mfg. Corp., Holtsville, Long Island, N. Y.
Sawhill Tubular Products, Inc., Sharon, Pa.
Span Brass Mfg. Co., Otsego, Mich.
Star Tubular Products Co., Chicago, Ill.
Superior Valve & Fittings Co., Pittsburgh, Pa.
Union Malleable Mfg. Co., Ashland, O.
Walworth Co., New York, N. Y.
Ware Coupling & Nipple Co., Ware, Mass.
Weatherhead Co., Ft. Wayne Div., Ft. Wayne, Ind.
Wheeling Machine Products Co., Wheeling, W. Va.

NIPPLES, PIPE, FLEXIBLE

Cobra Metal Hose Div., D-K Mfg. Co., Chicago, Ill.
Davis Engineering Corp., Elizabeth, N. J.
Hauck Mfg. Co., Brooklyn, N. Y.
Johnson Metal Hose, Inc., Waterbury, Conn.
Lindy Heaters, Inc., New York, N. Y.
Plastipipe, Products of Plastic Process Co., Div. of Monadnock Mills, Los Angeles, Calif.
Ra-Rich Mfg. Corp., Holtsville, Long Island, N. Y.
Techniflex Corp., Port Jervis, N. Y.
Tube Turns Plastics, Inc., Louisville, Ky. (PVC)
U. S. Flexible Metallic Tubing Co., Los Angeles, Calif.
United States Rubber Co., New York, N. Y. (rubber)

NIPPLES, PIPE, IRON AND STEEL

Aeroquip, Inc., Van Wert, O.
Afco Fitting Co., Div. of Curtis Mfg. Co., Cleveland, O.
Albert Pipe Supply Co., Inc., Brooklyn, N. Y.
Allen Mfg. Co., W. D., Bellwood, Ill.
Byers Co., A. M., Pittsburgh, Pa. (Wrought iron)
Camco Fittings, Inc., North Haven, Conn.
Capitol Mfg. & Supply Co., Columbus, O.
Chicago Nipple Mfg. Co., Oak Park, Ill.
Clow & Sons, Inc., James B., Chicago, Ill.
Cobra Metal Hose Div., D-K Mfg. Co., Chicago, Ill.
Columbus Mfg. & Supply Co., Columbus, O.
Crane Co., Chicago, Ill.
Grabler Mfg. Co., Cleveland, O.
Grinnell Co., Inc., Providence, R. I.
Henry Valve Co., Melrose Park, Ill.
Illinois Malleable Iron Co., Chicago, Ill.
Ladish Co., Cudahy, Wis.
Pacific Fittings Div., General Metals Corp., Hollydale, Calif.
Pittsburgh Nipple Wks., Inc., Pittsburgh, Pa.
Pittsburgh Pipe & Coupling Co., Allison Park, Pa.
Ra-Rich Mfg. Corp., Holtsville, Long Island, N. Y.
Sawhill Tubular Products, Inc., Sharon, Pa.
Star Tubular Products Co., Chicago, Ill.
Union Malleable Mfg. Co., Ashland, O.
Victaulic Co. of America, Elizabeth, N. J.
Walworth Co., New York, N. Y.
Ward Foundries, Inc., J. P., Blossburgh, Pa.
Ware Coupling & Nipple Co., Ware, Mass.
Wheeling Machine Products Co., Wheeling, W. Va.

NIPPLES, PIPE, NICKEL AND NICKEL ALLOY

Camco Fittings, Inc., North Haven, Conn.
Cobra Metal Hose Div., D-K Mfg. Co., Chicago, Ill.
Cooper Alloy Corp., Hillside, N. J.
Crane Co., Chicago, Ill.
Electric Steel Foundry Co., Portland, Ore.
Haynes Stellite Co., Div. of Union Carbide Corp., New York, N. Y.
Ladish Co., Cudahy, Wis.
Star Stainless Screw Co., Paterson, N. J.
Walworth Co., New York, N. Y.

NIPPLES, PIPE, PLASTIC

Argo Plastic Products, Cleveland, O.
Colonial Plastics Mfg. Co., Industrial Div., Cleveland, O.
Fibercast Co., Sand Spring, Okla.
Grinnell Co., Inc., Providence, R. I.
Kraloy Plastic Pipe Co., Inc., Los Angeles, Calif.
Luzerne Rubber Co., Trenton, N. J.
Mannesmann—Easton Plastic Products Co., Inc., Easton, Pa. (rigid unplasticized polyvinyl chloride)
Plastipipe, Products of Plastic Process Co., Div. of Monadnock Mills, Los Angeles, Calif.
Sawhill Tubular Products, Inc., Sharon, Pa.
Skyline Industries Sales, Inc., Titusville, Pa.
Sloane Mfg. Co., Sun Valley, Calif.
Star Tubular Products Co., Chicago, Ill.
Triangle Conduit & Cable Co., Inc., New Brunswick, N. J.
Tube Turns Plastics, Inc., Louisville, Ky.
Vanton Pump & Equipment Corp., Hillside, N. J.
Victaulic Co. of America, Elizabeth, N. J.
Wheeling Machine Products Co., Wheeling, W. Va.

NIPPLES, RADIATOR, SLIP AND SCREW

Crane Co., Chicago, Ill.
Fanner Mfg. Co., The, Cleveland, O.

NOISE CONTROL IN DUCTS

See Absorbers, Sound, Duct Section, Prefabricated for Noise Control In Duct Systems; Insulation, Duct, Sound Deadening

NOISE ELIMINATION FOR COOLING TOWERS

Hansson, Inc., Elof, Acoustical Div., New York, N. Y.
Industrial Sound Control Dept. of Koppers Co., Inc., Metal Products Div., Baltimore, Md.
International Aer Acoustics, New York, N. Y.
Mar-Coil Heater Co., Union City, N. J.
Sound Reduction Corp., East Hartford, Conn.
Vibration Mountings, Inc., Corona, N. Y.

NOISE ELIMINATORS

See Absorbers, Sound, Duct Section, Prefabricated for Noise Control in Duct Systems; Bases, Vibration Isolating, Pad Type; Bases, Vibration Isolating, Spring Type; Hose, Flexible, Metal and Fittings; Insulation, Duct, Sound Deadening

NOZZLES, ATOMIZING

American Moistening Co., Cleveland, N. C.
Bahnson Co., Winston-Salem, N. C.
Benjamin Air Rifle Co., St. Louis, Mo.
Bete Fog Nozzle Inc., Greenfield, Mass.
Binks Mfg. Co., Chicago, Ill.
Boston Machine Works Co., Lynn, Mass.
Century Engineering Corp., Cedar Rapids, Ia.
Delavan Mfg. Co., West Des Moines, Ia.
Eddington Metal Specialty Co., Eddington, Pa.
Engineer Co., New York, N. Y.
Grinnell Co., Inc., Providence, R. I.
Monarch Mfg. Works, Inc., Philadelphia, Pa.
National Airoil Burner Co., Inc., Philadelphia, Pa.
Parks Cramer Co., Fitchburg, Mass. (Industrial humidifier)
Ross Sprinkler Co., Rosemead, Calif.
Schutte and Koerting Co., Cornwells Heights, Bucks County, Pa.
Spray Engineering Co., Burlington, Mass.
Spraying Systems Co., Bellwood, Ill.
Steinen Mfg. Co., Wm., Newark, N. J.
Supreme Electric Products Corp., Rochester, N. Y.
Water Cooling Corp., New York, N. Y.

NOZZLES, FLOODING

American Moistening Co., Cleveland, N. C.
Bahnson Co., Winston-Salem, N. C.
Binks Mfg. Co., Chicago, Ill.
Delavan Mfg. Co., West Des Moines, Ia.
Spraying Systems Co., Bellwood, Ill.
Water Cooling Corp., New York, N. Y.

NOZZLES, FLOW MEASURING

Able Metal Spinning & Stamping Co., Far Rockaway, N. Y.
Bailey Meter Co., Cleveland, O.
Builders-Providence Div., B-I-F Industries, Inc., Providence, R. I. (open flow, inserts)
Defender Instrument & Regulator Co., Boody, Ill.
Delavan Mfg. Co., West Des Moines, Ia.
Foster Engineering Co., Union, N. J.
Foxboro Co., Foxboro, Mass.
Hagan Chemicals & Controls, Inc., Pittsburgh, Pa.
Penn Instruments Div. of Burgess-Manning Co., Philadelphia, Pa.
Republic Flow Meters Co., Chicago, Ill.
Schutte & Koerting Co., Cornwells Heights, Bucks County, Pa.

NOZZLES, OIL BURNER

Benjamin Air Rifle Co., St. Louis, Mo.
Century Engineering Corp., Cedar Rapids, Ia.
Delavan Mfg. Co., West Des Moines, Ia.
Eddington Metal Specialty Co., Eddington, Pa.
Engineer Co., New York, N. Y.
Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.
Monarch Mfg. Works, Inc., Philadelphia, Pa.
Schutte & Koerting Co., Cornwells Heights, Bucks County, Pa.
Steinen Mfg. Co., Wm., Newark, N. J.

NOZZLES, SPARGER, FOR TANK HEATING

Heil Process Equipment Corp., Cleveland, O.
Schutte and Koerting Co., Cornwells Heights, Bucks County, Pa.

NOZZLES, SPRAY

Allen Mfg. Co., W. D., Bellwood, Ill.
American Cooling Tower Co., Kansas City, Mo.
American Moistening Co., Cleveland, N. C.
April Showers Co., Inc., Washington, D. C.
Bahnson Co., Winston-Salem, N. C.
Benjamin Air Rifle Co., St. Louis, Mo.
Bete Fog Nozzle Inc., Greenfield, Mass.
Binks Mfg. Co., Chicago, Ill.
Black Mfg. Co., The, Baltimore, Md.
Buensod-Stacey, Inc., New York, N. Y.
Buffalo Forge Co., Buffalo, N. Y.
Carrier Corp., Syracuse, N. Y.
Chain Belt Co., Milwaukee, Wis.
Clarage Fan Co., Kalamazoo, Mich.
Delavan Mfg. Co., West Des Moines, Ia.
DeVilbiss Co., The, Toledo, O.
Duriron Co., Inc., Dayton, O.
Eddington Metal Specialty Co., Eddington, Pa.
Fluor Products Co., Whittier, Calif.
General Ceramics Corp., Keasbey, N. J. (ceramic and plastic)
Gray Co., Inc., Minneapolis, Minn.
Grinnell Co., Inc., Providence, R. I. (for fire protection)
Link-Belt Co., Chicago, Ill.
Maid-O'-Mist, Inc., Chicago, Ill. (air operated)
Monarch Mfg. Wks., Inc., Philadelphia, Pa.
Myers & Bro. Co., F. E., The, Ashland, O.
Parks-Cramer Co., Fitchburg, Mass.
Plant Engineering & Equipment Co., Elizabeth, N. J.
Plummer Spray Equipment Co., Napoleon, O.
Raisler Corp., Grimes Sprinkler Div., New York, N. Y.
Rega Mfg. Co., Rochester, N. Y.
Rockwood Sprinkler Co., Worcester, Mass.
Ross Sprinkler Co., Rosemead, Calif.
Schutte and Koerting Co., Cornwells Heights, Bucks County, Pa.
Skinner Irrigation Co., Troy, O.
Spray Engineering Co., Burlington, Mass.
Spraying Systems Co., Bellwood, Ill.
Stearns Co., N. C., Shreveport, La.
Steinen Mfg. Co., Wm., Newark, N. J.
Supreme Electric Products Corp., Rochester, N. Y.

Thermal Agency, Houston, Tex.
TOT Towers, Inc., Houston, Tex.
Water Cooling Corp., New York, N. Y.
Water Cooling Equipment Co., St. Louis, Mo.
Worthington Corp., East Orange, N. J.
Yarnall-Waring Co., Philadelphia, Pa.

NUTS AND WASHERS, LOCK

Allmetal Screw Products Co., Inc., Garden City, Long Island, N. Y.
Anti-Corrosive Metal Products Co., Inc., Castleton-On-Hudson, N. Y.
Buffalo Bolt Co., Div. of Buffalo-Eclipse Corp., North Tonawanda, N. Y.
Chase Brass & Copper Co., Waterbury, Conn.
Flagg & Co., Inc., Stanley G., Philadelphia, Pa.
Grip Nut Co., South Whitley, Ind.
Harper Co., H. M., Morton Grove, Ill.
Industrial Screw Co., Chicago, Ill.
Lamson & Sessions Co., Cleveland, O.
MacLean-Fogg Lock Nut Co., Chicago, Ill.
Moore Inc., Goodloe E., Danville, Ill.
Ohio Nut & Bolt Co., Berea, O.
Pheoll Mfg. Co., Industrial Fastener Div., Chicago, Ill.
Republic Steel Corp., Cleveland, O.
Rockford Screw Products Co., Rockford, Ill.
Russell, Burdsall & Ward Bolt & Nut Co., Port Chester, N. Y.
SKF Industries, Inc., Philadelphia, Pa.
Shakeproof Div., Illinois Tool Wks., Elgin, Ill.
Standard Pressed Steel Co., Jenkintown, Pa.
Star Stainless Screw Co., Paterson, N. J.
Stockham Valves & Fittings, Birmingham, Ala.
Tinnerman Corp., George A., Cleveland, O.
Walworth Co., New York, N. Y.
Ward Foundries, Inc., J. P., Blossburgh, Pa.

OBSERVATION BOILER PORTS

See Ports, Observations, Boiler

ODOR ADSORBERS

See Filters, Air; Adsorbers, Odor, for Duct Systems

ODOR NEUTRALIZERS

See Adsorbers, Odors, for Duct Systems Compounds, Air Freshening

OIL BURNERS

See Burners, Oil

OIL COOLERS

See Coolers, Oil

OIL, CUTTING, PIPE

Armstrong-Bridgeport Tool Mfg. Corp., Belleville, N. J.
Beaver Pipe Tools, Inc., Warren, O.
Blue Seal Chemical Co., Roselle Park, N. J.
Gulf Oil Corp., Pittsburgh, Pa.
Hercules Chemical Co., Inc., New York, N. Y.
Nye Tool Co., Chicago, Ill.
Oster Mfg. Co., Wickliffe, O.
Ridge Tool Co., Elyria, O.
S. O. S. Products Co., Inc., Brooklyn, N. Y.
Shell Oil Co., Lubricants Dept., Flushing, N. Y.
Socony-Mobil Oil Co., Inc., New York, N. Y.
Standard Oil Co. of California, San Francisco, Calif.
Standard Oil Co. of Indiana, Chicago, Ill.
Suflo, Inc., Elizabeth, N. J.
Sun Oil Co., Philadelphia, Pa.
Texas Co., The, New York, N. Y.
Toledo Pipe Threading Machine Co., Toledo, O.
Union Carbide Chemicals Co., Div. of Union Carbide Corp., New York, N. Y.
Warren Refining & Chemical Co., The, Cleveland, O.
Whitlam Mfg. Co., J. C., Wadsworth, O.
X Laboratories, Inc., New York, N. Y.

OIL, HEAT TRANSFER

Dow Corning Corp., Midland, Mich.
Gulf Oil Corp., Pittsburgh, Pa.
Imperial Oil & Grease Co., Inc., Los Angeles, Calif.
Monsanto Chemical Co., St. Louis, Mo.
Shell Oil Co., Lubricants Dept., Flushing, N. Y.
Socony-Mobil Oil Co., Inc., New York, N. Y.
Standard Oil Co. of Indiana, Chicago, Ill.
Sun Oil Co., Philadelphia, Pa.
Union Carbide Chemicals Co., Div. of Union Carbide Corp., New York, N. Y.

OIL, REFRIGERATION

Ansul Chemical Co., Refrigeration Div., Marinette, Wis.
Gulf Oil Corp., Pittsburgh, Pa.
Illinois Oil Products, Inc., Rock Island, Ill.
Sealed Units Parts Co., Inc., New York, N. Y.
Shell Oil Co., Lubricants Dept., Flushing, N. Y.
Socony-Mobil Oil Co., Inc., New York, N. Y.
Standard Oil Co. of California, San Francisco, Calif.
Standard Oil Co. of Indiana, Chicago, Ill.
Sun Oil Co., Philadelphia, Pa.
Texas Co., The, New York, N. Y.
York Corp., Subsidiary of Borg-Warner Corp., York, Pa.

OIL SEPARATORS

See Separators, Oil

OILER UNIT, FOR USE WITH PIPE THREADER

Ridge Tool Co., The, Elyria, O.

OILERS, FOR REFRIGERATION COMPRESSORS

Noera Mfg. Co., Div. Chase Brass & Copper Co., Waterbury, Conn.
Refrigeration Devices Co., Nutley, N. J.
Superior Valve & Fittings Co., Pittsburgh, Pa.
Trico Fuse Mfg. Co., Milwaukee, Wis.

OILS, FOR COATING VISCOUS AIR FILTERS

Continental Air Filters Inc., Louisville, Ky.
Gulf Oil Co., Pittsburgh, Pa.
Research Products Corp., Madison, Wis.
Standard Oil Co. of California, San Francisco, Calif.
Trion, Inc., McKees Rocks, Pa.
Union Carbide Chemicals Co., Div. of Union Carbide Corp., New York, N. Y.
Vortox Co., Claremont, Calif.

OIL HEATERS

See Heaters, Oil Tank, Suction Bell

OIL PREHEATERS

See Heaters, Oil Tank, Suction Bell; Preheaters, Fuel Oil; Units, Fuel Oil, Heating, Pumping and Straining

OPERATORS, DAMPER, DUCT

Ace Instrument Co., Inc., Brooklyn, N. Y.
Acro Div., Robertshaw-Fulton Controls Co., Columbus, O.
Arens Controls, Inc., Evanston, Ill.
Atmos Corp., Chicago, Ill.
Au-Temp-Co Corp., New York, N. Y.
Automatic Timing & Controls, Inc., King of Prussia, Pa.
Barber-Colman Co., Rockford, Ill.
Bristol Co., The, Waterbury, Conn.
Brooke Engineering Co., Inc., Philadelphia, Pa.
Cleveland Controls, Inc., Cleveland, O.
Conoflow Corp., Subsidiary of Walworth Co., Philadelphia, Pa.
Consolidated Metal Products Corp., Albany, N. Y.
Defender Instrument & Regulator Co., Boody, Ill.
Foxboro Co., Foxboro, Mass.
General Controls Co., Glendale, Calif., and Skokie, Ill.
Hagan Chemicals & Controls, Inc., Pittsburgh, Pa.
Hart & Cooley Mfg. Co., Holland, Mich.
Heat-Timer Corp., New York, N. Y.
Johnson Service Co., Milwaukee, Wis.
Mason-Neilan, Div. of Worthington Corp., Norwood, Mass.
Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.
Minneapolis-Honeywell Regulator Co., Industrial Div., Philadelphia, Pa.
National Controls, Inc., Newton, Mass.
New England Gear Works, Southington, Conn.
Nichols Instruments Co., Baltimore, Md.
Optimum Control Corp., Cleveland, O.
Powers Regulator Co., Skokie, Ill.
Reid Metal Products, Inc., Burbank, Calif.
Reliance Instrument Mfg. Corp., Glen Cove, Long Island, N. Y.
Sarcotherm Controls, Inc., New York, N. Y.
Shallcross Controls, Inc., Markesan, Wis.
Taylor Instrument Companies, Rochester, N. Y.
Wa-Trol, Houston, Tex.
Young Regulator Co., Cleveland, O.

OPERATORS, VALVE, HYDRAULIC OR ELECTRIC

Ace Instrument Co., Inc., Brooklyn, N. Y.
Arens Controls, Inc., Evanston, Ill.
Au-Temp-Co Corp., New York, N. Y.
Automatic Timing & Controls, Inc., King of Prussia, Pa.
Barber-Colman Co., Rockford, Ill.
Bristol Co., The, Waterbury, Conn.
Brooke Engineering Co., Inc., Philadelphia.
Cameron Iron Works, Inc., Houston, Tex.
Carter Controls, Inc., Lansing, Ill.
Conoflow Corp., Subsidiary of Walworth Co., Philadelphia, Pa.
Cutler-Hammer, Inc., Milwaukee, Wis.
Defender Instrument & Regulator Co., Boody, Ill.
De Zurik Corp., Sartell, Minn.
Foxboro Co., Foxboro, Mass.
General Controls Co., Glendale, Calif., and Skokie, Ill.
Hanna Engineering Wks., Chicago, Ill.
Heat-Timer Corp., New York, N. Y.
Homestead Valve Mfg. Co., Coraopolis, Pa.
Jamesbury Corp., Worcester, Mass.
Janette Electric Mfg. Co., Morton Grove, Ill.
Johnson Service Co., Milwaukee, Wis.
Kieley & Mueller, Inc., Middletown, N. Y.
Ledeen Mfg. Co., El Monte, Calif.
Mason-Neilan, Div. of Worthington Corp., Norwood, Mass.
McDonnell & Miller, Inc., Chicago, Ill.
Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.
Minneapolis-Honeywell Regulator Co., Industrial Div., Philadelphia, Pa.
New England Gear Works, Southington, Conn.
Nichols Instruments Co., Baltimore, Md.
Optimum Control Corp., Cleveland, O.
Philadelphia Gear Corp., Philadelphia, Pa.
Powers Regulator Co., Skokie, Ill.
Reid Metal Products, Inc., Burbank, Calif.
Reliance Instrument Mfg. Corp., Glen Cove, Long Island, N. Y.
Sparton Corp., Jackson, Mich.
Techniflex Corp., Port Jervis, N. Y.
Taylor Instrument Companies, Rochester, N. Y.
Weighing & Control Components, Inc., Hatboro, Pa
Wheeler Mfg. Co., C. H., Philadelphia, Pa.

OPERATORS, VALVE, REMOTE, HAND

Babbitt Steam Specialty Co., New Bedford, Mass.
Crane Co., Chicago, Ill.
Homestead Valve Mfg. Co., Coraopolis, Pa.
Jamesbury Corp., Worcester, Mass
Jordan Corp., Div. of OPW Corp., Cincinnati, O.
Ladish Co., Cudahy, Wis.
Philadelphia Gear Corp., Philadelphia, Pa.
Reid Metal Products, Inc., Burbank, Calif.
Stow Mfg. Co., Binghamton, N. Y.

ORIFICE FLANGES

See Flanges, Orifice

ORIFICE UNIONS

See Unions, Orifice

ORIFICES, FLOW MEASURING

American Meter Co., Inc., Philadelphia, Pa
Bailey Meter Co., Cleveland, O.
Bristol Co., The, Waterbury, Conn.
Brooks Rotameter Co., Lansdale, Pa.
Builders-Providence Div., B-I-F Industries, Inc., Providence, R. I.
Defender Instrument & Regulator Co., Boody, Ill.
Dynametrics Corp., Burlington, Mass.
Ellison Draft Gage Co., Chicago, Ill.
Fischer & Porter Co., Hatboro, Pa.

Foxboro Co., Foxboro, Mass.
Hagan Chemicals & Controls, Inc., Pittsburgh, Pa.
Infilco, Inc., Tucson, Ariz.
Madden Corp., The, Chicago, Ill.
Meriam Instrument Co., The, Cleveland, O.
Minneapolis-Honeywell Regulator Co., Industrial Div., Philadelphia, Pa.
Penn Instruments Div. of Burgess-Manning Co., Philadelphia, Pa.
Phoenix Products Co., Milwaukee, Wis. (spun metal)
Republic Flow Meters Co., Chicago, Ill.
Simplex Valve & Meter Co., Lancaster, Pa.
Taylor Instrument Companies, Rochester, N. Y.
Trimount Instrument Co., Chicago, Ill.

ORIFICES, RADIATOR

Barnes & Jones, Inc., Newtonville, Mass.
Cashin Co., W. D., Boston, Mass.
Illinois Engineering Products, American Air Filter Co., Inc., Louisville, Ky.
Johnson Service Co., Milwaukee, Wis.
Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.
Sarco Co., Inc., New York, N. Y.
Sarcotherm Controls, Inc., New York, N. Y.
Thrush & Co., H. A., Peru, Ind.
Webster & Co., Warren, Camden, N. J.

OVERFIRE AIR JETS

See Jets, Overfire Air, for Smoke Abatement

OVERHEAD VALVE OPERATORS

See Operators, Valve, Remote, Hand

OVER-PRESSURE UNLOADERS, FOR REFRIGERANTS

Black, Sivalls & Bryson, Inc., Kansas City, Mo.
Hubbell Corp., Mundelein, Ill.

OXY-ACETYLENE WELDING

See Welding and Cutting Apparatus, Oxy-Acetylene

OXYGEN PIPING AND REGULATING SYSTEMS

Air Reduction Sales Co., A Div. of Air Reduction Co., Inc., New York, N. Y.
Burdette Oxygen Co. of Calif., Huntington Park, Calif.
Linde Co., Div. of Union Carbide Corp., New York, N. Y.
Liquid Carbonic Div. of General Dynamics Corp., Chicago, Ill.
Melchior, Armstrong, Dessau Co. of Delaware, Inc., Ridgefield, N. J.
National Cylinder Gas Div. of Chemetron Corp., Chicago, Ill.
Oxygen Equipment & Service Co., Chicago.
Research Vacuum Supply Co., Chicago, Ill.
Superior Valve & Fittings Co., Pittsburgh, Pa.

OZONE APPARATUS

Michael Electric Co., Inc., New Haven, Conn.
Montgomery Bros., San Francisco, Calif.
Norwood Associated Engineers Inc., Springfield, Mass.
Welsbach Corp., The, Kitson Valve Div., Philadelphia, Pa.

PACKAGED HEAT PUMP UNITS

See Unit, Air Conditioning, Reverse Refrigeration Cycle

PACKAGED STEAM GENERATORS

See Boilers, Packaged Units, Heating and Process

PACKING, ASBESTOS

Abbott & Biddle Co., Philadelphia, Pa.
Acme Asbestos Covering & Flooring Co., Chicago, Ill.
Allpax Co., Inc., Mamaroneck, N. Y.
Anchor Packing Co., Philadelphia, Pa.
Belmont Packing & Rubber Co., The, Philadelphia, Pa.
Carey Mfg. Co., Philip, Lockland, Cincinnati, O. (insulating panel for housing)
Chesterton Co., A. W., Everett, Mass.
Chicago Specialty Mfg. Co., Chicago, Ill.
Crane Packing Co., Morton Grove, Ill.
Darcoid Co., Inc., New York, N. Y.
Durabla Mfg. Co., New York, N. Y.
Felt Products Mfg. Co., Skokie, Ill.
Flexrock Co., Philadelphia, Pa.
Garlock Packing Co., Palmyra, N. Y.
Gatke Corp., Chicago, Ill.
Goodall Rubber Co., Trenton, N. J.
Goodrich Industrial Products Co., B. F., Akron, O.
Goodyear Tire & Rubber Co., Akron, O.
Grant Wilson, Inc., Chicago, Ill.
Greene, Tweed & Co., North Wales, Pa.
Houghton & Co., E. F., Philadelphia, Pa.
Johns-Manville, New York, N. Y.
Keasbey & Mattison Co., Ambler, Pa.
Linear Incorporated, Philadelphia, Pa.
New York Belting & Packing Co., Passaic, N. J.
Nicolet Industries, Inc., Hamilton, O.
North American Asbestos Corp., Chicago, Ill.
Pacific States Felt & Mfg. Co., Inc., San Francisco, Calif.
Porter Co., Inc., H. K., Quaker Rubber Div., Philadelphia, Pa.
Q-P Mfg. Co., Needham Heights, Mass.
Raybestos-Manhattan, Inc., Passaic, N. J.
Rhopac, Inc., Skokie, Ill.
Sims Pump Valve Co., Hoboken, N. J.
Superior Valve & Fittings Co., Pittsburgh, Pa.
United States Rubber Co., New York, N. Y.
Zimmerman Packing, Cincinnati, O.

PACKING, FIBER

Allpax Co., Inc., Mamaroneck, N. Y.
Anchor Packing Co., Philadelphia, Pa.
Armstrong Cork Co., Lancaster, Pa.
Belmont Packing & Rubber Co., The, Philadelphia, Pa.
Chesterton Co., A. W., Everett, Mass.
Crane Packing Co., Morton Grove, Ill.
Darcoid Co., Inc., New York, N. Y.
Durabla Mfg. Co., New York, N. Y.
Flexrock Co., Philadelphia, Pa.
Garlock Packing Co., Palmyra, N. Y.
Goodall Rubber Co., Trenton, N. J.
Greene, Tweed & Co., North Wales, Pa.
Hinde & Dauch Paper Co., Sandusky, O.
Houghton & Co., E. F., Philadelphia, Pa.
Johns-Manville, New York, N. Y.
Linear Incorporated, Philadelphia, Pa.
New York Belting & Packing Co., Passaic, N. J.
North American Asbestos Corp., Chicago, Ill.
Pacific States Felt & Mfg. Co., Inc., San Francisco, Calif.
Porter Co., Inc., H. K., Quaker Rubber Div., Philadelphia, Pa.
Raybestos-Manhattan, Inc., Passaic, N. J.
Sims Pump Valve Co., Hoboken, N. J.
Superior Valve & Fittings Co., Pittsburgh, Pa.
United States Rubber Co., New York, N. Y.
Zimmerman Packing, Cincinnati, O.

PACKING, LEATHER

Anchor Packing Co., Philadelphia, Pa.
Belmont Packing & Rubber Co., The, Philadelphia, Pa.
Chicago Belting Div., Chicago-Allis Mfg Corp., Chicago, Ill.
Excelsior Leather Washer Mfg. Co., Rockford, Ill.
Garlock Packing Co., Palmyra, N. Y.
Graton & Knight Co., Worcester, Mass.
Houghton & Co., E. F., Philadelphia, Pa.
Pacific States Felt & Mfg. Co., San Francisco, Calif.
Q-P Mfg. Co., Needham Heights, Mass.
Rhoads & Sons, J. E., Wilmington, Del.
Schieren Co., Chas. A., Camden, N. J.
Sims Pump Valve Co., Hoboken, N. J.
Superior Valve & Fittings Co., Pittsburgh, Pa.
Williams & Son, I. B., Dover, N. H.
Zimmerman Packing, Cincinnati, O.

PACKING, METALLIC

Allpax Co., Inc., Mamaroneck, N. Y.
Anchor Packing Co., Philadelphia, Pa.
Belmont Packing & Rubber Co., The, Philadelphia, Pa.
Chesterton Co., A. W., Everett, Mass.
Conneaut Plastic Metallic Packing Co., Conneaut, O.
Crane Packing Co., Morton Grove, Ill.
Darcoid Co., Inc., New York, N. Y.
Felt Products Mfg. Co., Skokie, Ill.
Flexrock Co., Philadelphia, Pa.
Garlock Packing Co., Palmyra, N. Y.
Greene, Tweed & Co., North Wales, Pa.
Johns-Manville, New York, N. Y.
Johnston Foil Mfg. Co., St. Louis, Mo.
New York Belting & Packing Co., Passaic, N. J.
Pacific States Felt & Mfg. Co., Inc., San Francisco, Calif.
Q-P Mfg. Co., Needham Heights, Mass.
Sims Pump Valve Co., Hoboken, N. J.
United States Rubber Co., New York, N. Y.
Zimmerman Packing, Cincinnati, O.

PACKING, RUBBER AND SYNTHETIC

Allpax Co., Inc., Mamaroneck, N. Y.
American Felt Co., Glenville, Conn.
Anchor Packing Co., Philadelphia, Pa.
Armstrong Cork Co., Lancaster, Pa.
Baker & Co., R. H., Los Angeles, Calif.
Belmont Packing & Rubber Co., The, Philadelphia, Pa.
Boston Woven Hose & Rubber Co., Div. of American Biltrite Rubber Co., Cambridge, Mass.
Chesterton Co., A. W., Everett, Mass.
Chicago Belting Div., Chicago-Allis Mfg. Corp., Chicago, Ill.
Chicago Specialty Mfg. Co., Chicago, Ill.
Continental Rubber Wks., Erie, Pa.
Crane Packing Co., Chicago, Ill.
Darcoid Co., Inc., New York, N. Y.
Dow Corning Corp., Midland, Mich.
Felt Products Mfg. Co., Skokie, Ill.
Flexrock Co., Philadelphia, Pa.
Garlock Packing Co., Palmyra, N. Y.
Gates Rubber Co., Denver, Colo.
Goodall Rubber Co., Trenton, N. J.
Goodrich Industrial Products Co., B. F., Akron, O.
Goodyear Tire & Rubber Co., Akron, O.
Greene, Tweed & Co., North Wales, Pa.
Hamilton Rubber Mfg. Corp., Trenton, N. J.
Hewitt-Robins, Inc., Stamford, Conn.
Houghton & Co., E. F., Philadelphia, Pa.
Johns-Manville, New York, N. Y.
LaFavorite Rubber Mfg. Co., Hawthorne, N. J.
Linear Incorporated, Philadelphia, Pa. (semi-metallic, non-metallic)
Mercer Rubber Co., Hamilton Sq., N. J.
Minnesota Rubber Co., Minneapolis, Minn.
Nazar Rubber Co., Toledo, O.
New York Belting & Packing Co., Passaic, N. J.
Pacific States Felt & Mfg. Co., Inc., San Francisco, Calif.
Porter Co., Inc., H. K., Quaker Rubber Div., Philadelphia, Pa.
Q-P Mfg. Co., Needham Heights, Mass.
Raybestos-Manhattan, Inc., Passaic, N. J.
Republic Rubber Div., Lee Rubber & Tire Corp., Youngstown, O.
Rhopac, Inc., Skokie, Ill.
Rubber Products Div., Parker-Hannifin Corp., Cleveland, O.
Saran Lined Pipe Co., Ferndale, Mich.
Superior Valve & Fittings Co., Pittsburgh, Pa.
Thermoid Co., Trenton, N. J.
United States Gasket Co., Camden, N. J.
United States Rubber Co., New York, N. Y.
United States Stoneware Co., New York, N. Y.
Western Felt Works, Chicago, Ill.
Zimmerman Packing, Cincinnati, O.

PAINT, HIGH TEMPERATURE, FOR HOT SURFACES

Arco Co., The, Cleveland, O.
Babbitt Chemical Co., Inc., New Bedford, Mass.
Barreled Sunlight Paint Co., Providence, R. I. (heat resistant aluminum)
Barrett Div., Allied Chemical & Dye Corp., New York, N. Y.
Carey Mfg. Co., Philip, Lockland, Cincinnati, O.
Chem Industrial Co., Brooklyn, O.
Chemical Coatings & Engineering Co., Media, Pa.
Chemical Solvent Co., Birmingham, Ala.
Claronex Products, Inc., Brooklyn, N. Y. (liquid aluminum)
Continental Products Co., Euclid, O.

Corrosion Control Co., Inc., New York, N. Y.
Dampney Co., Hyde Park, Boston, Mass.
Debevoise Co., The, Brooklyn, N. Y.
Dixon Crucible Co., Joseph, Jersey City, N. J.
du Pont de Nemours & Co., E. I., Finishes Div., Wilmington, Del.
Felt Products Mfg. Co., Skokie, Ill.
Flexrock Co., Philadelphia, Pa.
Foster Co., Benjamin, Philadelphia, Pa.
General Paint Corp., San Francisco, Calif.
Glidden Co., The, Cleveland, O.
Hague & Co., Inc., Alfred, Div. of Lacquer & Chemical Corp., Brooklyn, N. Y.
Hercules Chemical Co., Inc., New York, N. Y.
Horn Companies, A. C., Subsidiary of Sun Chemical Corp., New York, N. Y.
Illinois Bronze Powder Co., Chicago, Ill.
Koppers Company, Inc., Pittsburgh, Pa.
Markal Co., Chicago, Ill.
Master Mechanics Co., The, Cleveland, O.
Metal & Thermit Corp., Rahway, N. J.
Midland Paint & Varnish Co., Cleveland, O.
Moran Paint Co., Xenia, O.
Nebel Mfg. Co., Cleveland, O.
Peters Co., The, Div. of Toledo Paint & Chemical Co., Toledo, O.
Pittsburgh Plate Glass Co., Pittsburgh, Pa.
Quigley Co., Inc., New York, N. Y.
Randolph-Page, Inc., New York, N. Y. (for radiators)
S.O.S. Products Co., Inc., Brooklyn, N. Y.
Sandstrom Products Co., Port Byron, Ill.
Sherwin-Williams Co., The, Cleveland, O.
Sonneborn Sons, Inc., L., Building Products Div., New York, N. Y. (heat-resisting aluminum)
Speco, Inc., Cleveland, O.
Steelcote Mfg. Co., St. Louis, Mo.
Thompson and Co., Oakmont, Pa.
Tropical Paint Co., Cleveland, O.
Truscon Laboratories Div., Devoe & Raynolds Co., Inc., Detroit, Mich.
Valdura Div., American-Marietta Co., Chicago, Ill.
Warren Refining & Chemical Co., The, Cleveland, O.
Whitlam Mfg. Co., J. C., Wadsworth, O.
Wilbur & Williams Co., Brighton, Mass.

PANEL BOARDS

See Boards, Panel and Control

PANEL HEATING AND COOLING

See Coils and Panels, Radiant Heating and Cooling; Panels, Electric Heating

PANELS, ELECTRIC HEATING

Adam Electric Co., Frank, St. Louis, Mo.
Ampere Industries, Newark, N. J.
Berko Electric Mfg. Co., Queens Village, N. Y.
Can Arm Corp., Champlain, N. Y.
Cavalier Corp., Electric Heating Div., Chattanooga, Tenn.
Ceilheat, Inc., Knoxville, Tenn.
Continental Radiant Glass Heating Corp., New York, N. Y.
Corning Glass Works, Corning, N. Y.
Dixie Raydiant Electric Heat Corp., Atlanta, Ga.
Electrend Products Corp., St. Joseph, Mich.
Electromode Div. of Commercial Controls Corp., Rochester, N. Y.
Electrovector, Inc., Brooklyn, N. Y.
Ervite Corp., Erie, Pa. (porcelain enameled)
Heatmore, Inc., Brooklyn, N. Y.
LaSalle Products, Inc., Buffalo, N. Y.
Matthews Electric Heater Mfg. Co., Albertville, Ala.
Modernheat Cable Corp., Kingsport, Tenn.
Pyrne & Co., Inc., Pomona, Calif.
Roberson Inc., Seattle, Wash.
Salton Mfg. Co., Inc., New York, N. Y.
Sunwarm, Inc., Kingsport, Tenn.
ThermoRay Corp., Newark, N. J.
Westinghouse Electric Corp., Electric Heater Div., Emeryville, Calif.
Wiegand Co., Edwin L., Pittsburgh, Pa.

PANELS, PERFORATED, FOR AIR DIFFUSION

Diamond Mfg. Co., Wyoming, Pa.
Harrington & King Perforating Co., Inc., Chicago.
Mahon Co., R. C., The, Detroit, Mich.
Manhattan Perforated Metal Co., Inc., Long Island City, N. Y.
Multi Vent Div., Pyle-National Co., The, Chicago, Ill.
Mundt & Sons, Charles, Jersey City, N. J.
Simplex Ceiling Corp., New York, N. Y.
Wakefield Co., The, Vermilion, O.

PANELS, WINDOW, FOR AIR CONDITIONERS

Russel: Co., F. C., The, Cleveland, Ohio
Southern Plastics Co., Columbia, S. C.

PARTS FOR HEATING AND AIR CONDITIONING EQUIPMENT

Ackermann Mfg. Co., Wheeling, W. Va.
Adams Co., The, Dubuque, Iowa
Air & Refrigeration Corp., New York, N. Y. (factory insulated panels)
Alter Co., Harry, Chicago, Ill.
Atlas Mfg. Co., St. Paul, Minn. (boiler jackets, furnace cabinets, air conditioning cabinets)
By-Buk Co., Los Angeles, Calif. (pressure sensitive corner pads for preventing surface scratches)
Campco Div., Chicago Molded Products Corp., Chicago, Ill. (Knobs and handles)
Carey Mfg. Co., Philip, Lockland, Cincinnati, O.
Cincinnati Metalcrafts Inc., Cincinnati, O. (sheet metal fabricating)
Commercial Shearing & Stamping Co., Youngstown, O.
Detroit Stamping Co., Detroit, Mich.
Duro-Dyne Corp., Farmingdale, L. I., N. Y. (hardware and parts used in fabricating dampers and turning vanes)
Eaton Mfg. Co., Foundry Div., Vassar, Mich. (gray iron castings for air conditioning equipment)
Elkhart Products Corp., Elkhart, Ind. (fabricated tubular parts)
Falstrom Co., Passaic, N. J. (Air conditioning cabinets, steel control panels)
Federal-Mogul Div., Federal-Mogul-Bower Bearings, Inc., Detroit, Mich. (bushings, sleeves, ferrules)
General Tire & Rubber Co., Logansport, Ind. (Blower mounting)
Harrison Sheet Steel Co., Chicago, Ill. (covers for radiators)
Mueller Brass Co., Port Huron, Mich. (Specially fabricated copper tubing, machine formed tubes)
National Lock Co., Inc., Rockford, Ill. (hinges, handles, latches, catches, supports, etc.)
Nylok Corp., The, Paramus, N. J. (self-locking fasteners)
Phoenix Products Co., Milwaukee, Wis. (metal spinnings for fan housings, diffusers, etc.)
Pittsfield Products, Inc., Ann Arbor, Mich. (perforated wire cloth parts)
Reco Products Div., Recony Corp., New York, N. Y.
Republic Steel Corp., Cleveland, O. (cabinets, housings, canopies)
South Chester Corp., Southco Div., Lester, Pa. (blind rivets, panel fasteners, door retaining springs)
Standard Pressed Steel Co., Jenkintown, Pa. (socket screws, spring pins)
Utica Products, Inc., Utica, N. Y.
Ventfabrics, Inc., Chicago, Ill. (damper hardware for making dampers) (latches and hardware fan access doors)

PARTS, REFRIGERATING COMPRESSORS

(Manufacturers of parts only for repairing compressors. For manufacturers of compressors — See Compressors, Refrigerating)

Hunt Spiller Mfg. Corp., Boston, Mass.
Production Stamping Co., Omaha, Nebr.
Sealed Unit Parts Co., Inc., New York, N. Y.
Shank Co., Cyrus, Chicago, Ill.

PENETRANT, DYE, FOR NON-DESTRUCTIVE TESTING OF METAL

Met-L-Chek Co., Los Angeles, Calif.
Turco Products, Inc., Los Angeles, Calif.

PENETRANT SOLVENT FOR LOOSENING THREADED JOINTS

See Solvent, Penetrant

pH INDICATORS

See Indicators, pH

PILLOW BLOCK BEARINGS

See Bearings, Pillow Block

PILOT LIGHTS

See Lights, Pilot and Signal

PILOTS, GAS, FOR OIL BURNERS

Eclipse Fuel Engineering Co., Rockford, Ill.
Hauck Mfg. Co., Brooklyn, N. Y.
National Airoil Burner Co., Inc., Philadelphia, Pa.
Ransome Torch & Burner Co., Emeryville, Calif.
Rayfield-Staffco Burner Co., Chicago, Ill.
Schurs Oil Burner Co., Los Angeles, Calif.
Scully Signal Co., Melrose, Mass.
White-Rodgers Co., St. Louis, Mo.

PINS, FOR FLANGE LINE-UP

Mathey Machine Works, Inc., C. A., Tulsa, Okla.

PIPE, ALUMINUM

Aluminum Co. of America, Pittsburgh, Pa.
Bridgeport Brass Co., Bridgeport, Conn.
Central Steel & Wire Co., Chicago, Ill.
Fluor Products Co., Whittier, Calif.
Hasvey Aluminum, Torrance, Calif.
Kaiser Aluminum & Chemical Sales, Inc., Chicago, Ill.
Revere Copper & Brass, Inc., New York, N. Y.
Reynolds Metals Co., Richmond, Va.
Roll-Weld Pipe & Tube, Inc., Jacksonville, Fla.
Ryerson & Son, Inc., Joseph T., Chicago, Ill.
Wolverine Tube, Div. of Calumet and Hecla, Inc., Allen Park, Mich.
Youngstown Welding & Engineering Co., Youngstown, O.

PIPE, ASBESTOS FIBER AND CEMENT

Enderle, Inc., Ltd., Frank X., Los Angeles, Calif.
Johns-Manville, New York, N. Y.
Keasbey & Mattison Co., Ambler, Pa.

PIPE BENDERS

See Benders, Pipe

PIPE BIT SETS

See sets, Pipe Bit

PIPE, BRASS AND COPPER

American Brass Co., Waterbury, Conn.
American Sanitary Mfg. Co., Abingdon, Ill.
Bridgeport Brass Co., Bridgeport, Conn.
Central Steel & Wire Co., Chicago, Ill.
Chase Brass & Copper Co., Waterbury, Conn.
Gardiner Metal Co., Chicago, Ill.
Hussey & Co., C. G., Div. Copper Range Co., Pittsburgh, Pa.
Lewin-Mathes Co., Div. of Cerro de Pasco Corp., St. Louis, Mo.
Mueller Co., Decatur, Ill.
Mueller Brass Co., Port Huron, Mich.
Phelps Dodge Copper Products Corp., New York, N. Y.
Reading Tube Corp., New York, N. Y.
Revere Copper and Brass, Inc., New York, N. Y.
Roberts Tube Div., Prestyle Mfg. Co., Detroit, Mich.
Wolverine Tube, Div. of Calumet and Hecla, Inc., Allen Park, Mich.

PIPE, CAST IRON, PRESSURE, BELL AND SPIGOT

Alabama Pipe Co., Anniston, Ala.
American Cast Iron Pipe Co., Birmingham, Ala.

Central Foundry Co., Newark, N. J.
Clow & Sons, Inc., James B., Chicago, Ill.
Combustion Engineering Inc., New York.
Duriron Co., Inc., Dayton, O. (Acid resisting)
Inner-Tite Div. of Yara Engineering Corp., Elizabeth, N. J.
Lynchburg Foundry Co., Lynchburg, Va.
McWane Cast Iron Pipe Co., Birmingham, Ala.
Shahmoon Industries, Inc., Warren Foundry & Pipe Div., New York, N. Y.
United States Pipe & Foundry Co., Birmingham, Ala.

PIPE, CAST IRON, PRESSURE FLANGED

Alabama Pipe Co., Anniston, Ala.
American Cast Iron Pipe Co., Birmingham, Ala.
Clow & Sons, Inc., James B., Chicago, Ill.
Duriron Co., Inc., Dayton, O. (Acid resisting)
Lynchburg Foundry Co., Lynchburg, Va.
McWane Cast Iron Pipe Co., Birmingham, Ala.
Shahmoon Industries, Inc., Warren Foundry & Pipe Div., New York, N. Y.
United States Pipe & Foundry Co., Birmingham, Ala.

PIPE, CAST IRON, THREADED

Alabama Pipe Co., Anniston, Ala.
American Cast Iron Pipe Co., Birmingham, Ala.
Clow & Sons, Inc., James B., Chicago, Ill.
United States Pipe & Foundry Co., Birmingham, Ala.

PIPE CLEANING COMPOUNDS

See Compounds, Cleaning Pipe Coil and Condenser

PIPE CLEANING MACHINES

See Machines, Pipe Cleaning; Cleaners, Pipe Line, Electrically Driven; Rams, Water, for Cleaning Out Pipe Lines

PIPE COILS

See Coils, Pipe

PIPE COUPLINGS

See Couplings, Pipe

PIPE COVERING, ADHESIVES

See Adhesives, for Pipe Covering

PIPE CUTTERS

See Cutters, Pipe

PIPE CUTTING MACHINES

See Machines, Pipe Cutting and Threading; Cleaners, Pipe Line, Electrically Driven; Rams, Water, for Cleaning Out Pipe Lines

PIPE EXTRACTORS

See Extractors, Pipe

PIPE, FIBER

Brown Co., Boston, Mass.
Central Foundry Co., Newark, N. J.
Line Material Industries, McGraw-Edison Co., Milwaukee, Wis.
Orangeburg Mfg. Co., Orangeburg, N. Y.

PIPE, FINNED

Brown Fintube Co., Elyria, O.
Crane Co., Chicago, Ill.
Drayer-Hanson, Div. of National-U. S. Radiator Corp., Los Angeles, Calif.
Edwards Engineering Corp., Pompton Plains, N. J.
F5 Air Conditioning Corp., Tulsa, Okla.
Frick Co., Waynesboro, Pa. (square and spiral)
Griscom-Russell Co., The, Massillon, O.
Heat Transfer Products, Inc., Perkasie, Pa.
Imeco, Inc., Chicago, Ill.
Kritzer Radiant Coils, Inc., Batavia, Ill.
Lee Vine Fin-Tube Radiator Co., Inc., New Haven, Conn.
Recoy Div. of Schemenauer Mfg. Corp., Holland, O.
Rome-Turney Radiator Co., Rome, N. Y.
Schemenauer Mfg. Corp., Holland, O.
Sterling Radiator Co., Inc., Westfield, Mass.
Tenney Engineering, Inc., Union, N. J.

Vulcan Radiator Co., Hartford, Conn.
Yuba Mfg. Div., Yuba Consolidated Inc., Benicia, Calif.

PIPE AND FITTINGS, GAS VENT AND FLUE

Adelta Mfg. Co., Inc., Philadelphia, Pa.
Armstrong Fittings Co., Des Moines, Ia.
Condensation Engineering Corp., Chicago, Ill.
Dura-Vent Corp., Redwood City, Calif.
Enderle, Inc., Ltd., Frank X., Los Angeles, Calif.
Excelsior Steel Furnace Co., The, Chicago, Ill.
Hart & Cooley Mfg. Co., Holland, Mich.
Harvey Aluminum, Torrance, Calif.
Johns-Manville, New York, N. Y.
La Crosse Steel Roofing & Corrugating Co., La Crosse, Wis.
Metal Fabricators, Inc., Charlotte, N. C.
Meyer & Bro. Co., F., Peoria, Ill.
Mirror Patented Stove Pipe Co., Hartford, Conn.
Reeves Steel & Mfg. Co., Div. of Empire-Reeves Steel Corp., Dover, O.
Robinson Clay Product Co., The, Akron, O.
Van-Packer Co. Div. of the Flintkote Co., Chicago Heights, Ill.
Wallace Co., William, Metalbestos Div., Belmont, Calif.
Waverly Heating Supply Co., Beverly, Mass.
Williamson Co., The, Cincinnati, O.

PIPE FITTINGS

See Fittings, Pipe

PIPE, GLASS

Corning Glass Wks., Corning, N. Y.
Fischer & Porter Co., Hatboro, Pa.

PIPE HANGERS

See Hangers and Supports, Pipe

PIPE, HARD RUBBER

American Hard Rubber Co., Div. of Amerace Corp., Butler, N. J.
Gates Engineering Co., Wilmington, Del.
General Tire & Rubber Co., Akron, O.
Goodrich Industrial Products Co., B. F., Akron, O.
Hewitt-Robins, Inc., Stamford, Conn.
Luzerne Rubber Co., Trenton, N. J. (Hard rubber)
Raybestos-Manhattan, Inc., Passaic, N. J. (Flexible)
United States Rubber Co., New York, N. Y.
Vanton Pump & Equipment Corp., Hillside, N. J.

PIPE INSULATION ADHESIVES

See Adhesives, for Pipe Covering

PIPE, JACKETED

Devine Mfg. Co., Inc., J. P., Pittsburgh, Pa.
Durant Insulated Pipe Co., E. Palo Alto, Calif.
Flori Pipe Co., The, St. Louis, Mo.
Heat & Power Corp., Baltimore, Md.
Hetherington & Berner, Inc., Indianapolis, Ind.
Kaiser Co., E. B., Glenview, Ill.
Midwest Piping Co., Inc., St. Louis, Mo.
Nooter Corp., St. Louis, Mo.
Parks-Cramer Co., Fitchburg, Mass.
Pittsburgh Pipe Coil & Bending Co., Etna, Pittsburgh, Pa.
Red Jacket, Inc., Carnegie, Pa.
Ric-wiL, Inc., Barberton, O.
Roessing Mfg. Co., Pittsburgh, Pa.
Snaw-Kendall Engineering Co., Toledo, O.
Taylor Engineering Corp., Detroit, Mich.
Youngstown Welding & Engineering Co., Youngstown, O.

PIPE JOINT COMPOUNDS

See Cement and Compounds, Pipe Joint

PIPE LOCATORS

See Locators, Pipe, Underground

PIPE, LINED

American Cast Iron Pipe Co., Birmingham, Ala. (Cement)
American Hard Rubber Co., Div. of Amerace Corp., Butler, N. J. (Rubber)
American Smelting & Refining Co., Federated Metals Div., New York, N. Y.
Arco Products, Automotive Rubber Co., Detroit, Mich.
Armco Drainage & Metal Products, Inc., Welded Pipe Sales Div., Middletown, O.
Barrows Porcelain Enamel Corp., Cincinnati, O. (glass, ceramic-coated)
Bart Mfg. Corp., Belleville, N. J.
Cement Lined Pipe Co., Lynn, Mass. (Cement)
Division Lead Co., Summit, Ill. (lead)
Gates Engineering Co., Wilmington, Del.
Goodrich Industrial Products Co., B. F., Akron, O.
Heil Process Equipment Corp., Cleveland, O.
Heresite & Chemical Co., Manitowoc, Wis. (pure phenolic baking type; synthetic rubber coating)
Hill, Hubbell & Co., Cleveland, O.
Knapp Mills, Inc., Long Island City, N. Y.
Knight, Maurice A., Akron, O.
LaFavorite Rubber Mfg. Co., Hawthorne, N. J.
Lead Lined Iron Pipe Co., Wakefield, Mass. (Lead and tin lined)
Luzerne Rubber Co., Trenton, N. J. (Hard rubber)
Michigan Pipe Co., Ferndale, Mich. (Wood, saraloy)
National Lead Co., New York, N. Y. (Lead)
Nooter Corp., St. Louis, Mo.
Raybestos-Manhattan, Inc., Passaic, N. J. (Rubber)
Resisto Pipe & Valve Co., East Cambridge, Mass. (Lead)
Saran Lined Pipe Co., Ferndale, Mich. (saran lined)
Shahmoon Industries, Inc., Warren Foundry & Pipe Div., New York, N. Y. (cement)
Southern Pipe & Casing Co., Div. of U. S. Industries, Inc., Azusa, Calif.
United States Rubber Co., New York, N. Y. (Rubber)
Youngstown Sheet & Tube Co., Youngstown, O.

PIPE, NICKEL AND NICKEL ALLOY

Babcock & Wilcox Co., Tubular Products Div., Beaver Falls, Pa.
Biggs Boiler Works Co., The, E. Akron, O.
Chase Brass & Copper Co., Waterbury, Conn.
Crucible Steel Co. of America, Pittsburgh, Pa.
Electric Steel Foundry Co., Portland, Ore.
Fluor Products Co., Whittier, Calif.
Haynes Stellite Co., Div. of Union Carbide Corp., New York, N. Y.
International Nickel Co., Inc., The, New York, N. Y.
Nuclear & Power Equipment Corp., S. San Francisco, Calif.
Revere Copper and Brass, Inc., New York.
Standard Tube Co., Detroit, Mich.
Trent Tube Co., East Troy, Wis.
Youngstown Welding & Engineering Co., Youngstown, O.

PIPE, NICKEL PLATED

Bart Mfg. Corp., Belleville, N. J.
Chase Brass & Copper Co., Waterbury, Conn.
Saran Lined Pipe Co., Ferndale, Mich. (lectro-clad)

PIPE, PLASTIC

Alpha Plastics, Inc., Livingston, N. J. (PVC, rigid)
Amco Plastic Pipe Co., San Leandro, Calif. (rigid & semi flexible)
Amercoat Corp., South Gate, Calif. (rigid epoxy, 550 psi at 130 F)
American Agile Corp., Bedford, O.
American Hard Rubber Co., Div. of Amerace Corp., Butler, N. J. (rigid, flexible)
American Molding Co., San Francisco, Calif.
Anesite Co., Chicago, Ill. (polyethylene, butyrate, kralastic)
Argo Plastic Products, Cleveland, O.
Associated Plastic Co's., Inc., Midland, Mich. (rigid polyvinyl)
Atlas Mineral Products Co., Mertztown, Pa. (rigid polyvinyl chloride for service up to 150 F)
Byers Co., A. M., Pittsburgh, Pa. (Rigid PVC; 140 F max.)
Carlon Products Corp., Cleveland, O.
Chesflex Div., St. Regis Paper Co., Yonkers, N. Y. (polyethylene, flexible)
Colonial Plastics Mfg. Co., Industrial Div., Cleveland, O. (Rigid PVC 40 - 160 F pressures function of size, wall thickness and Temp.)

Commercial Plastics Co., Chicago, Ill.
Consolidated Pipe Co. of America, Akron, O.
Continental-Diamond Fibre Corp., Newark, Del.
Corite Products, Inc., Chicago, Ill. (rigid fiberglas, reinforced polyester)
Crane Co., Chicago, Ill.
Crane & Associates, Robert S., Columbus, O.
Crescent Plastics, Inc., Evansville, Ind. (flexible, semi-rigid and rigid)
Danielson Mfg. Co., Danielson, Conn.
Dow Chemical Co., Midland, Mich. (saran-lined pipe, iron or steel and saran pipe)
DuVerre, Inc., Buffalo, N. Y. (polyester bonded fiber glass)
Evanite Plastic Co., Div. of Evans Pipe Co., Uhrichsville, O.
Fibercast Co., Sand Spring, Okla. (rigid) 0-1000 psi; −60F to 300F)
Franklin Plastics, Inc., Franklin, Pa. (polyethylene non-rigid. Temp. not to exceed 140 F. Pressures from 40 to 104 lbs.)
General Tire & Rubber Co., Akron, O.
Goodall Rubber Co., Trenton, N. J.(flexible & rigid)
Goodrich Industrial Products Co., B. F., Koroseal Div., Marietta, O. (polyvinyl chloride rigid)
Goodrich Industrial Products Co., B. F., Akron, O. (Max. 150 F pressures to 400 psi; rigid)
Grinnell Co., Inc., Providence, R. I. (rigid PVC)
Hamilton Rubber Mfg. Corp., Trenton, N. J.
Haveg Industries, Inc., Wilmington, Del. (Resin-asbestos, polyester glass & polyvinyl chloride)
Heil Process Equipment Corp., Cleveland, O. (rigid)
Irvington Div., Minnesota Mining & Mfg. Co., Irvington, N. J. (flexible)
Johnson Plastic Corp., Chagrin Falls, O Kralastic-rigid: to 180F; pressures: to 150 psi; Polyethylene-non-rigid)
Knight, Maurice A., Akron, O. (rigid, glass cloth reinforced resin 280 F)
Kraloy Plastic Pipe Co., Inc., Los Angeles.
LaFavorite Rubber Mfg. Co., Hawthorne, N. J.
Luzerne Rubber Co., Trenton, N. J. (rigid PVC)
Lynch Asbestos Co., Los Angeles, Calif. (rigid & non-rigid; polyethylene; kralastic; PVC)
Mannesmann-Easton Plastic Products Co., Easton, Pa. (rigid-unplasticized polyvinyl chloride)
Manufacturers Corp., Mansfield, O.
Marken Plastics Corp., Los Angeles, Calif. PVC and polyethylene)
Minnesota Mining & Mfg. Co., St. Paul, Minn. (2" 180 F. 800 psi and 1200 psi operating pressure) (reinforced. plastic; rigid)
Mueller Brass Co., Port Huron, Mich. (Rigid temp. range up to 175 F; non-rigid temp. range up to 140 F)
Murray Products Div. of Fanner Mfg. Co., Cleveland, O. (polyethylene, flexible)
National Tube Div., United States Steel Corp., Pittsburgh, Pa. (flexible polyethylene) (rigid polyvinyl chloride)
Orangeburg Mfg. Co., Orangeburg, N. Y. (polyethylene, flexible, to 150 psi)
Perfex Plastics, Inc., Chicago, Ill.
Plastex Co., Columbus, O. (non-rigid)
Plastipipe, Products of Plastic Process Co., Div. of Monadnock Mills, Los Angeles, Calif. (flexible polyethylene; semi-rigid butyrate)
Polymer Corp., The, Reading, Pa. (rigid, nylon)
Pyramid Plastics, Inc., Chicago, Ill. (saran; rigid)
Reflin Co., San Diego, Calif. (rigid, reinforced with glass fibers 200 psi; 170F)
Republic Steel Corp., Cleveland, O. (polyethylene, kralastic, and butyrate; flexible & semi rigid)
Ryerson & Son, Inc., Joseph T., Chicago, Ill. (PVC rigid & non-rigid)
Saran Lined Pipe Co., Ferndale, Mich. (saran)
Seelye Craftsmen, The, Minneapolis, Minn. (rigid)
Skyline Industries Sales, Inc., Titusville, Pa. (polyethylene and PVC; rigid and flexible) (−40 F to +180 F, 75 psi to 617 psi at 74 F)
Southern Plastics Co., Columbia, S. C. (rigid, non-rigid)
Southwestern Plastic Pipe Co., Mineral Wells, Tex. (polyethylene; PVC; butyrate)
Telsco Fittings Div., Dallas, Tex. (Rigid PVC; 75 psi and 125 psi; 140 F max.)
Triangle Conduit & Cable Co., Inc., New Brunswick, N. J. (flexible, semi-rigid high impact & rigid PVC)
United States Rubber Co., New York, N. Y.
United States Stoneware Co., Plastics & Synthetics Div., Akron, O.
Valco Corp., St. Paul, Minn.
Vanton Pump & Equipment Corp., Hillside, N. J. (rigid up to 225F; PVS)
Walworth Co., New York, N. Y. (rigid PVC)
Western Plastics Corp., Tacoma, Wash. polyethylene & kralastic)
Yardley Plastics Co., Columbus, O. (rigid and non-rigid O F - 125 F)
Youngstown Sheet & Tube Co., Youngstown, O. (rigid)

PIPE PLUGS

See Plugs, Pipe

PIPE, PRE-INSULATED

Beltran Associates, Inc., Brooklyn, N. Y.
Durant Insulated Pipe Co., E. Palo Alto, Calif.
Durant Insulated Pipe Co., Inc., Williamstown, N. J.
Kaiser Co., E. B., Glenview, Ill.
Ric-wil., Inc., Barberton, O.

PIPE REAMERS

See Reamers, Pipe

PIPE REPAIR CLAMPS

See Clamps, Pipe Repair

PIPE REPAIR KITS

See Kits, Repair for Pipes, Tanks, Valves, Flanges, and Ducts

PIPE ROTATOR AND HOLDER

See Rotator, Pipe, for Holding Pipe While Cutting, Welding

PIPE, SPIRAL, FOR HIGH VELOCITY AIR SYSTEMS

See Ducts, Spiral Welded

PIPE, SPIRAL, WELDED

Armco Drainage & Metal Products, Inc., Welded Pipe Sales Div., Middletown, O.
Naylor Pipe Co., Chicago, Ill.
Nikoh Tube Co., Chicago, Ill.
Taylor Forge & Pipe Wks., Chicago, Ill.
Wickwire Spencer Steel Div., The Colorado Fuel & Iron Corp., New York, N. Y.

PIPE, STEAM TRACED

Aluminum Co. of America, Pittsburgh, Pa.

PIPE, STEEL, BUTT AND LAP WELDED

Alco Products, Inc., Schenectady, N. Y.
Bethlehem Steel Co., Bethlehem, Pa.
Biggs Boiler Works Co., The, E. Akron, O. (large diameter)
Central Steel & Wire Co., Chicago, Ill.
Chicago Metal Mfg. Co., Chicago, Ill.
Fretz-Moon Tube Co., Butler, Pa.
Jones & Laughlin Steel Corp., Pittsburgh, Pa.
Kellogg Co., M.W., The, New York, N. Y.
Laclede Steel Co., St. Louis, Mo.
National Tube Div., United States Steel Corp., Pittsburgh, Pa.
Republic Steel Corp., Cleveland, O. (electric-weld)
Revere Copper & Brass, Inc., New York, N. Y.
Roll-Weld Pipe & Tube, Inc., Jacksonville, Fla. (resistance welded)
Ryerson & Son, Inc., Joseph T., Chicago, Ill.
Sawhill Tubular Products, Inc., Sharon, Pa.
Semet-Solvay Engineering Div., Allied Chemical Corp., New York, N. Y. (Specially fabricated)
Southern Pipe & Casing Co., Div. of U. S. Industries, Inc., Azusa, Calif.
Spang-Chalfant, Div. of National Supply Co., Pittsburgh, Pa.
Wheatland Tube Co., Philadelphia, Pa.
Wheeling Steel Corp., Wheeling, W. Va.
Youngstown Sheet & Tube Co., Youngstown, O.

PIPE, STEEL, SEAMLESS

Alco Products, Inc., Schenectady, N. Y.
Babcock & Wilcox Co., Tubular Products Div., Beaver Falls, Pa.
Bethlehem Steel Co., Bethlehem, Pa.
Electric Steel Foundry Co., Portland, Ore.
Jones & Laughlin Steel Corp., Pittsburgh, Pa.
National Tube Div., United States Steel Corp., Pittsburgh, Pa.
Phoenix Iron & Steel Co., Phoenixville, Pa.
Pittsburgh Steel Co., Pittsburgh, Pa.
Republic Steel Corp., Cleveland, O.
Ryerson & Son, Inc., Joseph T., Chicago, Ill.
Sawhill Tubular Products, Inc., Sharon, Pa.
Spang-Chalfant, Div. of National Supply Co., Pittsburgh, Pa.
Youngstown Sheet & Tube Co., Youngstown, O.

PIPE, STEEL, STAINLESS

Alco Products, Inc., Schenectady, N. Y.
Allegheny Ludlum Steel Corp., Pittsburgh, Pa.
Babcock & Wilcox Co., Tubular Products Div., Beaver Falls, Pa.
Carpenter Steel Co., Alloy Tube Div., Union, N. J.
Central Steel & Wire Co., Chicago, Ill.
Chase Brass & Copper Co., Waterbury, Conn.
Crucible Steel Co. of America, Pittsburgh, Pa.
Damascus Tube Co., Greenville, Pa.
Electric Steel Foundry Co., Portland, Ore.
Fluor Products Co., Whittier, Calif.
Greenville Tubes, Inc., Greenville, Pa.
National Tube Div., United States Steel Corp., Pittsburgh, Pa.
Naylor Pipe Co., Chicago, Ill.
Nuclear & Power Equipment Corp., S. San Francisco, Calif.
Republic Steel Corp., Cleveland, O.
Roll-Weld Pipe & Tube, Inc., Jacksonville, Fla.
Ryerson & Son, Inc., Joseph T., Chicago, Ill.
Sawhill Tubular Products, Inc., Sharon, Pa.
Standard Tube Co., Detroit, Mich.
Swepco Tube Corp., Clifton, N. J.
Trent Tube Co., East Troy, Wis.
Wheeling Steel Corp., Wheeling, W. Va.
Youngstown Sheet & Tube Co., Youngstown, O.

PIPE, STONEWARE

General Ceramics Corp., Keasbey, N. J.
Knight, Maurice A., Akron, O. (acid-proof)
Lapp Insulator Co., LeRoy, N. Y.
United States Stoneware Co., New York.
United States Stoneware Co., Plastics & Synthetics Div., Akron, O. (also porcelain)

PIPE SUPPORTS

See Hangers and Supports, Pipe

PIPE SURFACE, THERMOMETERS

See Thermometers, Indicating, Pipe Surface

PIPE THREADERS

See Stocks and Dies

PIPE, TIN

Belmont Smelting & Refining Works, Inc., Brooklyn, N. Y.
Bunker Hill Co., The, Sales & Fabrication Div., Seattle, Wash.
Division Lead Co., Summit, Ill.
Enderle, Inc., Ltd., Frank X., Los Angeles.
National Lead Co., New York, N. Y.
Revere Copper & Brass, Inc., Foil Div., Brooklyn, N. Y.

PIPE TONGS

See Tongs, Pipe

PIPE, TUBING, FITTINGS AND VALVES, CARBON AND GRAPHITE

General Ceramics Corp., Keasbey, N. J.
National Carbon Co., Div. of Union Carbide Corp., New York, N. Y.

PIPE AND TUBING, LEAD AND LEAD ALLOY

American Smelting & Refining Co., Federated Metals Div., New York, N. Y.
Belmont Smelting & Refining Works, Inc., Brooklyn, N. Y.

Bunker Hill Co., The, Sales & Fabrication Div., Seattle, Wash.
Division Lead Co., Summit, Ill.
Flemm Lead Co., Inc., Long Island City, N. Y.
Gardiner Metal Co., Chicago, Ill.
Knapp Mills, Inc., Long Island City, N. Y.
National Lead Co., New York, N. Y.
Revere Copper & Brass, Inc., Foil Div., Brooklyn, N. Y.
Rochester Lead Works, Inc., Rochester, N. Y.

PIPE, VITRIFIED CLAY
American Vitrified Products Co., Cleveland, O.
Bowerston Shale Co., The, Bowerston, O.
General Ceramics Corp., Keasbey, N. J.
Heat Transmission Conduit Co., Cleveland, O
Logan Clay Products, Logan, O.
National Clay Pipe Mfg. Inc., Washington, D. C.
Robinson Clay Product Co., The, Akron, O.
Stillwater Clay Products Co., The, Cleveland, O.
Straitsville Brick Co., New Straitsville, O.
Superior Clay Corp., The, Uhrichsville, O.
Texas Vitrified Pipe Co., Mineral Wells, Tex.
Universal Sewer Pipe Co., Cleveland, O.

PIPE, WOOD
Fluor Products Co., Whittier, Calif.

PIPE WRENCHES
See Wrenches, Pipe

PIPE, WROUGHT IRON
Byers Co., A. M., Pittsburgh, Pa.

PIPING, FABRICATED
See Bends, Expansion, Steam Pipe; Headers, Pipe, Welded; Coils, Pipe

PIPING IDENTIFICATON MARKERS
See Identification Markers for Piping Services

PISTON RINGS
See Rings, Piston

PITOT TUBES
See Tubes, Pitot

PITTSBURGH LOCK FORMING MACHINES
See Machines, Pittsburgh Lock Forming

PLASTIC PIPE METAL INSERTS
See Inserts, Metals, for Plastic Pipe

PLASTIC PIPE AND PIPE FITTINGS
See Pipe, Plastic; Fittings, Pipe, Plastic

PLASTIC PIPE AND SHEET WELDERS
See Welders, for Plastic Pipe or Plastic Sheet

PLASTIC SHEETS FOR DUCTS AND HOODS
See Sheets, Plastic for Ducts and Hoods

PLASTIC TUBING
See Tubing, Plastic

PLASTICS, POWDERS AND RESINS (BASIC MATERIALS)
Barrett Div., Allied Chemical & Dye Corp., New York, N. Y.
Chemical Coatings & Engineering Co., Media, Pa.
Chemical Sales Div., Firestone Plastics Co., Pottstown, Pa.
Dow Chemical Co., The, Midland, Mich.
Dow Corning Co., Midland, Mich.
du Pont de Nemours & Co., E. I. Polychemicals Dept., Wilmington, Del. (nylon. polyethylene, fluorocarbon & acrylic resins)
Durex Plastics Div., Hooker Chemical Corp., North Tonawanda, N. Y.
Eastman Chemical Products, Inc., Subsidiary, Eastman Kodak Co., New York, N. Y.
Enjay Co., New York, N. Y.
General Electric Co., Chemical Materials Dept., Pittsfield, Mass. (phenolic) (polycarbonate resin)
General Tire & Rubber Co., Akron, O.
Goodrich Chemical Co., B. F., Cleveland, O.
Hercules Powder Co., Wilmington, Del.
Interchemical Corp., Finishes Div., Newark, N. J. (polyester resins)
Koppers Co., Inc., Pittsburgh, Pa.
Metal & Thermit Corp., Rahway, N. J.
Naugatuck Chemical Div., U. S. Rubber Co., Naugatuck, Conn.
Pittsburgh Plate Glass Co., Pittsburgh, Pa.
Plastics Div., Eastman Chemical Products, Inc., Kingsport, Tenn. (acetate, butyrate, propionate, polyethylene)
Polymer Corp., The, Reading, Pa.
Union Carbide Plastics Co., Div. of Union Carbide Corp., New York, N. Y.

PLATES, FLOOR AND CEILING
Ackermann Mfg. Co., Wheeling, W. Va.
American Sanitary Mfg. Co., Abingdon, Ill
Beaton & Cadwell Mfg. Co., New Britain, Conn.
Beaton & Corbin Mfg. Co., Southington, Conn.
Chase Brass & Copper Co., Waterbury, Conn.
Chicago Specialty Mfg. Co., Chicago, Ill.
Eastern Stainless Steel Corp., Baltimore, Md. (stainless steel)
Fee & Mason Mfg. Co., Inc., Manasquan, N. J.
G & H Mfg. Co., Philadelphia, Pa.
Globe Products, Huppower Div., Hupp Corp., Detroit, Mich.
Grabler Mfg. Co., Cleveland, O.
Grinnell Co., Providence, R. I.
Inland Steel Co., Chicago, Ill.
Keeney Mfg. Co., Newington, Conn.
Little Brass Goods Co., M. S., Hartford, Conn.
Modern Hanger Corp., The, Cleveland, O.
New York Air Valve Corp., Brooklyn, N. Y.
Pipe Plugs, Inc., Wellington, O.
Ritter Pattern & Casting Co., Inc., New York, N. Y.
Ryerson & Son, Inc., Joseph T., Chicago, Ill
U. S. Expansion Bolt Co., York, Pa.
U. S. Plug & Fitting Co., Wellington, O
Zurn Industries, Inc., Erie, Pa.

PLUGS, CAPS AND CLOSURES FOR PROTECTING PIPE AND TUBE FITTINGS
Capitol Mfg. & Supply Co., Columbus, O.
Clover Industries, Inc., Tonawanda, N. Y.
Grinnell Co., Inc., Providence, R. I.
Pipe Plugs, Inc., Wellington, O.
Plastiline, Inc., White Plains, N. Y. (plastic)
Protective Closures Co., Inc., CaPlugs Div., Buffalo, N. Y.
Scharer & Co., Ray A., Detroit, Mich.
U. S. Plug & Fitting Co., Wellington, O.
Wedge Protectors, Inc., Cleveland, O.

PLUG COCKS
See Valves, Plug

PLUG VALVES
See Valves, Plug

PLUGS, FUSIBLE, BOILER
Allen Mfg. Co., W. D., Bellwood, Ill.
Chicago Specialty Mfg. Co., Chicago, Ill.
Chiksan Co., Brea, Calif.
Division Lead Co., Summit, Ill.
Kerotest Mfg. Co., Pittsburgh, Pa.
Lamson & Sessions Co., The, Cleveland, O
Lunkenheimer Co., Cincinnati, O.
Mueller Brass Co., Port Huron, Mich.
Powell Co., Wm., The, Cincinnati, O.
Swift Lubricator Co., Inc., Elmira, N. Y.

PLUGS, PIPE, MAGNETIC, FOR REMOVING FERROUS PARTICLES
Pipe Plugs, Inc., Wellington, O.
U. S. Plug & Fitting Co., Wellington, O

PLUGS, PIPE, PRESSURE
Camco Fittings, Inc., North Haven, Conn.
Capitol Mfg. & Supply Co., Columbus, O.
Fibercast Co., Sand Spring, Okla.
Henry Valve Co., Melrose Park, Ill.
Ladish Co., Cudahy, Wis.
Pipe Plugs, Inc., Wellington, O.
Pittsburgh Pipe & Coupling Co., Allison Park, Pa.
Stockham Valves & Fittings, Birmingham, Ala.
U. S. Plug & Fitting Co., Wellington, O.

PLUGS, REPAIR, FOR PIPE
Adams Pipe Repair Products, El Monte, Calif.
Baker & Co., R. H., Los Angeles, Calif.
Kuhns Bros. Co., Dayton, O.
Ladish Co., Cudahy, Wis.
Parker-Kalon Div., Gen. Am. Trans. Corp., Clifton, N. J.
Pipe Plugs, Inc., Wellington, O.
Scharer & Co., Ray A., Detroit, Mich.
U. S. Plug & Fitting Co., Wellington, O.
Williamson, Inc., T. D., Tulsa, Okla.

PLUGS, REPAIR, FOR TANKS
Adams Pipe Repair Products, El Monte, Calif.
Baker & Co., R. H., Los Angeles, Calif.
Chicago Specialty Mfg. Co., Chicago, Ill.
Kenney Co., L. C., Chicago, Ill.
Parker-Kalon Div., Gen. Am. Trans. Corp., Clifton, N. J.
Pipe Plugs, Inc., Wellington, O.
Standard Pressed Steel Co., Jenkintown, Pa.
U. S. Plug & Fitting Co., Wellington, O.

PLUGS, TUBING TEST
Chicago Specialty Mfg. Co., Chicago, Ill.
Imperial Brass Mfg. Co., Chicago, Ill.
Mechanical Products Corp., Chicago, Ill.
Scharer & Co., Ray A., Detroit, Mich.

PORTS, OBSERVATION, BOILER
Bigelow Liptak Corp., Detroit, Mich.
Detroit Stoker Co., Monroe, Mich.
Ess Instrument Co., Bergenfield, N. J.
Green Fire Brick Co., Mexico, Mo.
National Airoil Burner Co., Inc., Philadelphia, Pa.
Plibrico Co., Chicago, Ill.
Preferred Utilities Mfg. Corp., New York, N. Y.
Reintjes Co., Geo. P., Kansas City, Mo.
Springfield Boiler Co., Springfield, Ill.

POSITIONERS, DRILL, FOR DRILLING HOLES AT REGULAR INTERVALS IN PIPE
Buck Mfg. Co., San Jose, Calif.
Eisler Engineering Co., Inc., Newark, N. J.

POSITIONERS, WELDING
Aronson Machine Co., Arcade, N. Y.
Buck Mfg. Co., San Jose, Calif.
Eisler Engineering Co., Inc., Newark, N. J.
Johnson Machine Works, Eau Claire, Wis.
Sight Feed Generator Co., West Alexandria, O. (automatic; submerged arc)
Webb Corp., The, Webb City, Mo.
Weidit, Inc., Detroit, Mich.
Worthington Corp., East Orange, N. J.

POWER FACTOR CORRECTION
See Capacitors

POWER SHEARS
See Shears, Power

PREHEATERS, FUEL OIL
Adsco Div., Yuba Consolidated Industries, Inc., Buffalo, N. Y.
Alco Products, Inc., Schenectady, N. Y.
Alstrom Corp., New York, N. Y.
American-Standard, Ross Heat Exchanger Div., Buffalo, N. Y.
Andale Co., Philadelphia, Pa.
Bell & Gossett Co., Morton Grove, Ill.
Best Combustion Equipment Co., Inc., W. N., Carlstadt, N. J.
Bros, Inc., Minneapolis, Minn.
Buxton Mfg. Co., Dover, N. J.
Cleaver-Brooks Co., Milwaukee, Wis.
Coen Co., San Francisco, Calif.
Condenser Service & Engineering Co., Inc., Hoboken, N. J.
Crotty Mfg. Co., Flushing, L. I., N. Y.
Davis Engineering Corp., Elizabeth, N. J.

Devine Mfg. Co., Inc., J. P., Pittsburgh, Pa.
Downingtown Iron Works, Inc., Div. of Pressed Steel Tank Co., Downingtown, Pa.
Doyle & Roth Mfg. Co., Inc., Brooklyn, N. Y.
Drying Systems Co., Chicago, Ill.
Edison Heatube Div., McGraw-Edison Co., Allegan, Mich.
Electro-Therm, Inc., Silver Spring, Md.
Engineer Co., New York, N. Y.
Falcon Equipment Co., New Brighton, Pa.
General Fittings Co., East Greenwich, R. I.
Griscom-Russell Co., Massillon, O.
Hauck Mfg. Co., Brooklyn, N. Y.
Heatron, Inc., York, Pa.
Hynes Electric Heating Div., Turbine Equipment Co., Westfield, N. J.
Industrial Engineering & Equipment Co., St. Louis, Mo. (Electric)
Johnson Corp., The, Three Rivers, Mich.
Killebrew Engineering Corp., St. Louis, Mo.
Leahy Mfg. Co., Los Angeles, Calif.
Lientz Co., B. P., Kansas City, Mo.
Manning & Lewis Engineering Co., Newark, N. J.
Mar-Coil Heater Co., Union City, N. J.
National Airoil Burner Co., Inc., Philadelphia, Pa.
National Pipe Bending Co., New Haven, Conn.
Old Dominion Iron & Steel Corp., Richmond, Va.
Patterson-Kelley Co., Inc., The, East Stroudsburg, Pa.
Preferred Utilities Mfg. Corp., New York, N. Y.
Rempe Co., Chicago, Ill.
Richmond Engineering Co., Richmond, Va.
Schutte and Koerting Co., Cornwells Heights, Bucks County, Pa.
Sims Co., Erie, Pa.
Staples & Pfeifer, San Francisco, Calif.
Superior Combustion Industries, Inc., New York, N. Y.
Taco Heaters, Inc., Cranston, R. I.
Thrush & Co., H. A., Peru, Ind.
Todd Shipyards Corp., Products Div., Brooklyn, N. Y.
Tranter Mfg., Inc., Lansing, Mich.
Trent Inc., Philadelphia, Pa.
Vulcan Electric Co., Danvers, Mass.
Whitlock Mfg. Co., W. Hartford, Conn.
Wiegand Co., Edwin L., Pittsburgh, Pa. (Electric)
Yuba Mfg. Div., Yuba Consolidated Industries, Inc., Benicia, Calif.
Yula Corp., Bronx, N. Y.

PREHEATERS AND STRESS RELIEVERS, ELECTRIC, FOR PIPE WELDS

Edison Heatube Div., McGraw-Edison Co., Allegan, Mich.
Electric Arc, Inc., Newark, N. J.
Falcon Equipment Co., New Brighton, Pa.
Fluor Products Co., Whittier, Calif.
Hobart Bros. Co., Troy, O.
Trent Inc., Philadelphia, Pa.
Universal Welder Corp., Cleveland, O.
Vulcan Electric Co., Danvers, Mass.
Wiegand Co., Edwin L., Pittsburgh, Pa.

PRE-INSULATED PIPE

See Pipe, Pre-Insulated

PRESSURE BLOWERS

See Blowers, High Pressure

PRESSURE CONTROLLERS

See Regulators, Pressure

PRESSURE GAGES

See Gages, Indicating, Pressure

PRESSURE INDICATOR-CONTROLLERS

See Indicator-Controllers, Pressure

PRESSURE RECORDER-CONTROLLERS

See Recorder-Controllers, Pressure

PRESSURE RECORDERS

See Recorders, Pressure and Vacuum

PRESSURE REDUCING VALVES

See Valves, Pressure Reducing and Regulating

PRESSURE REGULATING VALVES

See Valves, Pressure Reducing and Regulating

PRESSURE REGULATORS

See Regulators, Pressure

PRESSURE SWITCHES

See Switches, Pressure and Vacuum

PROCESS HEATING SYSTEMS

See Systems, Process Heating, High Temperature

PROCESS STEAM SUPERHEATERS

See Superheaters, Process Steam

PROCESS AND STORAGE TANKS

See Tanks, Process and Storage

PROPANE VAPORIZERS

See Vaporizers

PROPELLER FANS

See Fans, Propeller

PROPELLER PUMPS

See Pumps, Propeller

PROPORTIONING PUMPS

See Pumps, Proportioning

PROTECTIVE COATINGS

See Coatings, Protective, for Metals

PROTECTORS, GAGE GLASS

Blossom Mfg. Co., Inc., Brooklyn, N. Y.
Ernst Water Column & Gauge Co., Livingston, N. J.
Huyette Co., Inc., Paul B., Philadelphia, Pa.
Industrial Engineering Corp., Louisville, Ky.
Penberthy Mfg. Co., Div. of Buffalo Eclipse Corp., Detroit, Mich.
Reliance Gauge Column Co., Cleveland, O.

PROTECTORS, PIPE COVERING

Aljon Mfg. Co., Inc., Maspeth, N. Y.
Baldwin-Hill Co., Trenton, N. J.
Bigelow Liptak Corp., Detroit, Mich.
Blaw Knox Co., Power Piping & Sprinkler Div., Pittsburgh, Pa.
Blossom Mfg. Co., Inc., Brooklyn, N. Y.
Carpenter & Paterson, Inc., Cambridge, Mass.
Childers Mfg. Co., Houston, Tex.
Fee & Mason Mfg. Co., Inc., Manasquan, N. J.
General Aluminum Supply Co., Kansas City, Mo.
Grant Wilson, Inc., Chicago, Ill.
Grinnell Co., Inc., Providence, R. I.
Leibfried Mfg. Corp., C. H., Brooklyn, N. Y.
Modern Hanger Corp., The, Cleveland, O.
Poe Co., C. W., The, Cleveland, O. (Alum. jacketing)
Precision Paper Tube Co., Chicago, Ill.
Rector Mineral Trading Corp., New York, N. Y.
Smith Products Co., Northville, Mich.

PSYCHROMETERS, MOTOR ASPIRATED

American Moistening Co., Cleveland, N. C.
Bristol Co., The, Waterbury, Conn.
Foxboro Co., Foxboro, Mass.
Friez Instrument Div., Bendix Aviation Corp., Baltimore, Md.
G. M. Mfg. Co., New York, N. Y.
H-B Instrument Co., Philadelphia, Pa.
Hill & Co., E. Vernon, Lake Geneva, Wis.
Johnson Service Co., Milwaukee, Wis.
Minneapolis-Honeywell Regulator Co., Industrial Div., Philadelphia, Pa.
Moeller Instrument Co., Richmond Hill, N.Y.
Scientific Instrument Co., Detroit, Mich.
Universal Instruments Co., Brentwood, Md.
Weksler Instruments Corp., Freeport, L. I., N. Y.
Weston Instruments, Div. of Daystrom, Inc., Newark, N. J.

PSYCHROMETERS, SLING AND HAND ASPIRATED

Abbeon Supply Co., Jamaica, N. Y.
Airserco Mfg. Co., Inc., Pittsburgh, Pa.
American Moistening Co., Cleveland, N. C.
Bacharach Industrial Instrument Co., Pittsburgh, Pa.
Foxboro Co., Foxboro, Mass.
Friez Instrument Div., Bendix Aviation Corp., Baltimore, Md.
G. M. Mfg. Co., New York, N. Y.
Garden City Instruments, Inc., Chicago, Ill.
General Scientific Equipment Co., Philadelphia, Pa.
Green Instruments, Inc., Henry J., Westbury, N. Y.
Grinnell Co., Inc., Providence, R. I.
H-B Instrument Co., Philadelphia, Pa.
Hill & Co., E. Vernon, Lake Geneva, Wis.
Johnson Service Co., Milwaukee, Wis.
Kent-Moore Organization, Inc., Warren, Mich.
Moeller Instrument Co., Richmond Hill, N.Y.
Palmer Thermometers, Inc., Cincinnati (Norwood), O.
Parks-Cramer Co., Fitchburg, Mass.
Precision Thermometer & Instrument Co., Philadelphia, Pa.
Scientific Instrument Co., Detroit, Mich.
Taylor Instrument Companies, Rochester, N. Y.
Trerice Co., H. O., Detroit, Mich.
United States Gauge Div. of American Machine & Metals, Inc., Sellersville, Pa.
Weksler Instruments Corp., Freeport, L. I., N. Y.

PSYCHROSTATS

See Humidistats

PULLEYS AND SHEAVES, FOR BELT DRIVES

Allis-Chalmers Mfg. Co., Milwaukee, Wis.
American Pulley Co., Philadelphia, Pa. (adjustable diameter)
Boston Woven Hose & Rubber Co., Div. of American Biltrite Rubber Co., Cambridge, Mass. (taper bushing type)
Browning Mfg. Co., Maysville, Ky.
Central Die Casting & Mfg. Co., Inc., Chicago, Ill. (V belt)
Chicago Die Casting Mfg. Co., Chicago, Ill. (V-type and flat type)
Climax Metal Products Co., Cleveland, O. (V-belt and variable pitch)
Congress Drives Div., Tann Corp., Detroit, Mich. (V belt—fractional and multiple horsepower, and variable pitch)
Dayton Rubber Co., Dayton, O.
Dodge Mfg. Corp., Mishawaka, Ind.
Durkee-Atwood Co., Minneapolis, Minn. (V-Belt)
Duro Metal Products Co., Chicago, Ill. (steel & diecast)
Ft. Worth Steel & Machinery Co., Ft. Worth, Texas
Gates Rubber Co., The, Denver, Colo.
Goldens' Foundry & Machine Co., Columbus, Ga. (Cast iron)
Hewitt-Robins, Inc., Stamford, Conn. (Tapered cone, conveyor, flanged, grooved for round or V-Belt, iron, loose, motor, power transmission)
Hi-Lo Mfg. Co., Minneapolis, Minn. (variable pitch)
Jones Machinery Div., Hewitt-Robins, Inc., Chicago, Ill. (flat)
Lau Blower Co., Dayton, O.
Lewellen Mfg. Co., Columbus, Ind. (variable speed pulleys)
Lovejoy Flexible Coupling Co., Chicago, Ill. (variable speed pulleys, v-belt sheaves)
Maurey Mfg. Corp., Chicago, Ill. (Flat belt, v-belt steel and cast iron)
Mercury Clutch Div., Automatic Steel Products, Inc., Canton, O.
Morse Chain Co., Ithaca, N. Y. (sprockets for timing belt drives)
Pyott Foundry and Machine Co., Aurora, Ill.
Reeves Pulley Co., Div. of Reliance Electric & Engineering Co., Columbus, Ind. (variable speed)
Speed Selector Inc., Chagrin Falls, O. (variable pitch)
Sprout-Waldron & Co., Inc., Muncy, Pa. (cast iron standard pulleys)
Utility Fan Corp., Div. of Utility Appliance Corp., Los Angeles, Calif.
Valley Foundry & Machine Works, Inc., Fresno, Calif.
Wood's Sons Co., T. B., Chambersburg, Pa.
Worthington Corp., East Orange, N. J. (v-type)
Zatko Metal Products Co., Euclid, O. (stamped-one piece)

PULVERIZED COAL BURNERS

See Burners, Pulverized Coal

PUMP BASES

See Bases, Vibration Isolating, Pad Type; Bases, Vibration Isolating, Spring Type

PUMP-MOTOR UNITS, CLOSE-COUPLED

Allis-Chalmers Mfg. Co., Milwaukee, Wis.
American-Marsh Pumps, Inc., Battle Creek, Mich.
Aurora Pump Div., The New York Air Brake Co., Aurora, Ill.
Becher Pump Co., Chicago, Ill.
Berkeley Pump Co., Berkeley, Calif.
Blackmer Pump Co., Grand Rapids, Mich.
Buffalo Pumps, Div. of Buffalo Forge Co., Buffalo, N. Y.
Byron Jackson Pumps, Inc., A Subsid. of Borg-Warner Corp., Los Angeles, Calif.
Canton Stoker Corp., Canton, O.
Carver Pump Co., Muscatine, Ia.
Chempump Corp., Philadelphia, Pa. (canned motor)
Chicago Pump Co., Subsid. Food Machinery & Chemical Corp., Chicago, Ill.
Davidson Co., M. T., New York, N. Y.
Dean Hill Pump Co., Indianapolis, Ind.
Decatur Pump Co., Decatur, Ill.
Domestic Pump & Mfg. Corp., Shippensburg, Pa.
Eagan Co., Inc., Walter H., Philadelphia, Pa.
Gelber & Sons, Inc., S., Chicago, Ill.
Gorman-Rupp Co., Mansfield, O.
Goulds Pumps, Inc., Seneca Falls, N. Y.
Haskel Engineering & Supply Co., Glendale, Calif.
Ingersoll-Rand Co., New York, N. Y.
Jabsco Pump Co., Burbank, Calif.
LaBour Co., Inc., The, Elkhart, Ind.
Lancaster Pump & Mfg. Co., Lancaster, Pa.
Layne & Bowler, Inc., Memphis, Tenn.
Lecourtenay Co., Newark, N. J
Marlow Pumps, Div. of Bell & Gossett Co., Midland Park, N. J.
McDonald Mfg. Co., A. Y., Dubuque, Ia.
Myers & Bro. Co., F. E., The, Ashland, O.
Nash Engineering Co., South Norwalk, Conn.
Pacific Pumping Co., Oakland, Calif.
Palmer Electric Co., Inc., Detroit, Mich.
Peerless Pump Div., Food Machinery & Chemical Corp., Los Angeles, Calif.
Red Jacket Mfg. Co., Davenport, Ia.
Roper Hydraulics, Inc., Rockford, Ill.
Ruthman Machinery Co., Cincinnati, O.
Sta-Rite Products, Inc., Delavan, Wis.
Sundstrand Hydraulic Div., Rockford, Ill.
Swaby Mfg. Co., Chicago, Ill.
Taco Heaters, Inc., Cranston, R. I.
Tuthill Pump Co., Chicago, Ill.
Uniflow Mfg. Co., Erie, Pa.
Vanton Pump & Equipment Corp., Hillside, N. J.
Warren Pumps, Inc., Warren, Mass.
Webster Electric Co., Racine, Wis.
Weil Pump Co., Chicago, Ill.
Weinman Pump Mfg. Co., The, Columbus, O.
Worthington Corp., East Orange, N. J.

PUMP UNITS, FUEL OIL

See Units, Fuel Oil, Heating, Pumping and Straining

PUMP VALVES

See Valves, Pump

PUMPS, BOILER FEED

Aldrich Pump Co., Allentown, Pa.
Allis-Chalmers Mfg. Co., Milwaukee, Wis.
American Hydrovac, Div. Pitz Foundry, Inc., Brooklyn, N. Y.
American-Marsh Pumps, Inc., Battle Creek, Mich.
Aurora Pump Div., The New York Air Brake Co., Aurora, Ill.
Buffalo Pumps, Div. of Buffalo Forge Co., Buffalo, N. Y.
Byron Jackson Pumps, Inc., A Subsidiary of Borg-Warner Corp., Los Angeles, Calif.
Canton Stoker Corp., Canton, O.
Chicago Pump Co., Subsidiary of Food Machinery & Chemical Corp., Chicago, Ill.
Cissell Mfg. Co., Inc., W. M., Louisville, Ky.
Clark-Cooper Co., Inc., C C Pump Div., Palmyra, N. J.
Clayton Mfg. Co., El Monte, Calif.
Coffin Co., J. S., Jr., Englewood, N. J.
Columbus Steam Pump Wks. Co., Columbus, O.
Cyclotherm Div., National-U. S. Radiator Corp., Oswego, N. Y.
Davidson Co., M. T., New York, N. Y.
Dean Brothers Pumps, Inc., Indianapolis, Ind.
Dean Hill Pump Co., Indianapolis, Ind.
Dearborn Chemical Co., Chicago, Ill.
Decatur Pump Co., Decatur, Ill.
De Laval Steam Turbine Co., Trenton, N. J.
Deming Co., Salem, O.
Domestic Pump & Mfg. Corp., Shippensburg, Pa.
Dunham-Bush, Inc., West Harford, Conn.
Eagan Co., Inc., Walter H., Philadelphia, Pa.
Eclipse Fuel Enginering Co., Rockford, Ill.
Everite Pump & Mfg. Corp., Lancaster, Pa.
Fairbanks, Morse & Co., Chicago, Ill.
Federal Pump Corp., Brooklyn, N. Y.
Frederick Iron & Steel Inc., Frederick, Md.
Gardner-Denver Co., Quincy, Ill.
Gelber & Sons, Inc., S., Chicago, Ill.
Goulds Pumps, Inc., Seneca Falls, N. Y.
Hoffman Specialty Mfg. Corp., Indianapolis, Ind.
Ingersoll-Rand Co., New York, N. Y.
Johnson Corp., The, Three Rivers, Mich.
Johnston Pump Co., A Div. of Youngstown Sheet & Tube Co., Pasadena, Calif.
Kingsford Foundry & Machine Wks., Oswego, N. Y.
Kisco Boiler & Engineering Co., St. Louis, Mo.
Lattner Mfg. Co., P. M., Cedar Rapids, Iowa.
Lawrence Pump & Engine Co., Lawrence, Mass.
Lecourtenay Co., Newark, N. J.
Leyman Mfg. Corp., John H. McGowan Co. Div., Cincinnati, O.
Mears-Kane-Ofeldt, Inc., Div. S. T. Johnson Co., Bridgeport, Pa.
Myers & Bro. Co., F. E., The, Ashland, O
Nash Engineering Co., South Norwalk, Conn.
National Steam Pump Co., Upper Sandusky, O.
Pacific Pumping Co., Oakland, Calif.
Palmer Electric Co., Inc., Detroit, Mich.
Peerless Pump Div., Food Machinery & Chemical Corp., Los Angeles, Calif.
Penberthy Mfg. Co., Div. of Buffalo Eclipse Corp., Detroit, Mich
Pennsylvania Pump & Compressor Co., Easton, Pa.
Philadelphia Pump Div., American Meter Co., Philadelphia, Pa.
Preferred Utilities Mfg. Corp., New York.
Robbins & Myers, Inc., Springfield, O.
Roth Co., Roy E., Rock Island, Ill.
Schaub Engineering Co., Fred H., Chicago, Ill.
Skidmore Corp., St. Joseph, Mich.
Sta-Rite Products, Inc., Delavan, Wis.
Sterling, Inc., Milwaukee, Wis.
Stout & Sons, David, St. Louis, Mo.
Swaby Mfg. Co., Chicago, Ill.
Union Steam Pump Co., Battle Creek, Mich.
United Centrifugal Pumps, Oakland, Calif.
Universal Mfg. Co., Berkeley, Calif.
Warren Pumps, Inc., Warren, Mass.
Weil Pump Co., Chicago, Ill.
Weinman Pump Mfg. Co., The, Columbus, O.
Whittington Pump & Engineering Corp., Indianapolis, Ind.
Worthington Corp., East Orange, N. J.
Yeomans Bros. Co., Melrose Park, Ill.

PUMPS, CENTRIFUGAL

Advance Pump Co., Berkeley, Calif.
Allis-Chalmers Mfg. Co., Milwaukee, Wis.
American Hydrovac, Div. Pitz Foundry, Inc., Brooklyn, N. Y.
American-Marsh Pumps, Inc., Battle Creek, Mich.
American Well Wks., Aurora, Ill.
Ampco Metal, Inc., Milwaukee, Wis.
Aurora Pump Div., The New York Air Brake Co., Aurora, Ill
Barnes Manufacturing Co., Mansfield, O.
Barrett Haentjens & Co., Hazleton, Pa.
Bart Mfg. Corp., Belleville, N. J.
Bell & Gossett Co., Morton Grove, Ill.
Berkeley Pump Co., Berkeley, Calif.
Buffalo Pumps, Div. of Buffalo Forge Co., Buffalo, N. Y.
Byron Jackson Pumps, Inc., A Subsidiary of Borg-Warner Corp., Los Angeles, Calif.
Carver Pump Co., Muscatine, Ia.
Chain Belt Co., Milwaukee, Wis.
Chempump Corp., Philadelphia, Pa. magnetically driven, canned motor)
Chicago Pump Co., Subsidiary of Food Machinery & Chemical Corp., Chicago, Ill.
Coffin Co., J. S., Jr., Englewood, N. J.
Columbus Steam Pump Wks. Co., Columbus.
Corley Co., Inc., The, Plainville, Conn.
Davidson Co., M. T., New York, N. Y.
Dayton Electric Mfg. Co., Chicago, Ill.
Dean Brothers Pumps, Inc., Indianapolis.
Dean Hill Pump Co., Indianapolis, Ind.
Dearborn Chemical Co., Chicago, Ill.
Decatur Pump Co., Decatur, Ill.
DeLaval Steam Turbine Co., Trenton, N. J.
Deming Co., Salem, O.
Domestic Pump & Mfg. Corp., Shippensburg, Pa.
Dunham-Bush, Inc., West Hartford, Conn.
Duriron Co., Inc., Dayton, O. (Acid resisting)
Duro Co., The, Dayton, O.
Eagan Co., Inc., Walter H., Philadelphia, Pa.
Eco Engineering Co., Newark, N. J.
Essick Mfg. Co., Los Angeles, Calif.
Everite Pump & Mfg. Corp., Lancaster, Pa.
Fairbanks, Morse & Co., Chicago, Ill.
Federal Pump Corp., Brooklyn, N. Y.
Frederick Iron & Steel Inc., Frederick, Md.
Fulflo Specialties Co., Inc., The, Blanchester, O.
Gardner-Denver Co., Quincy, Ill.
Gelber & Sons, Inc., S., Chicago, Ill.
Gen-A-Matic Corp., Van Nuys, Calif.
General Ceramics Corp., Keasby, N. J. (chemical plastic and alumina, porcelain and graphite)
Gilbert & Barker Mfg. Co., West Springfield, Mass.
Goodfellow Co., Inc., F. D., Memphis, Tenn.
Gorman-Rupp Co., Mansfield, O.
Goulds Pumps, Inc., Seneca Falls, N. Y.
Granberg Corp., Oakland, Calif.
Hoffman Specialty Mfg. Corp., Indianapolis.
Industrial Filter & Pump Co., Chicago, Ill.
Ingersoll-Rand Co., New York, N. Y.
Kenco Pump Div., American Crucible Products Co., Lorain, O.
Kingsford Foundry & Machine Wks., Oswego, N. Y.
La Bour Co., Inc., The, Elkhart, Ind.
Ladish Co., Tri-Clover Div., Kenosha, Wis.
Lancaster Pump & Mfg. Co., Lancaster, Pa.
Lawrence Pump Inc., Lawrence, Mass.
Lawrence Pump & Engine Co., Lawrence, Mass.
Layne & Bowler, Inc., Memphis, Tenn.
Layton Co., Inc., Cudahy, Wis.
Lead Lined Iron Pipe Co., Wakefield, Mass. (lead lined and all lead)
Lecourtenay Co., Newark, N. J.
Leyman Mfg. Corp., John H. McGowan Co. Div., Cincinnati, O.
Little Giant Pump Co., Div. of Little Giant Vaporizer Co., Inc., Oklahoma City, Okla.
Luzerne Rubber Co., Trenton, N. J. (Hard rubber)
Marlow Pumps, Division of Bell & Gossett Co., Midland Park, N. J.
McDonald Mfg. Co., A. Y., Dubuque, Ia.
Memphis Pump & Mfg. Co., Memphis, Tenn.
Midwest Pump Div. of Sherwood Mfg. Co., Independence, Mo.
Myers & Bro. Co., F. E., The, Ashland, O.
National Carbon Co., Div. of Union Carbide Corp., New York, N. Y.
National Lead Co., New York, N. Y.
Oberdorfer Foundries, Inc., Syracuse, N. Y.
Pacific Pumping Co., Oakland, Calif.
Palmer Electric Co., Inc., Detroit, Mich.
Peerless Pump Div., Food Machinery & Chemical Corp., Los Angeles, Calif.
Pennsylvania Pump & Compressor Co., Easton, Pa
Price Pump Co., E. L., Sonoma, Calif.
Radiant Utilities Corp., Brooklyn, N. Y.
Red Jacket Mfg. Co., Davenport, Ia.
Ruthman Machinery Co., Cincinnati, O.
Saran Lined Pipe Co., Ferndale, Mich. (Saran Lined)
Skidmore Corp., St. Joseph, Mich.
Standard Electric Mfg. Co., West Berlin, N. J.
Sta-Rite Products, Inc., Delavan, Wis.
Sterling, Inc., Milwaukee, Wis.
Swaby Mfg. Co., Chicago, Ill.
Taber Pump Co., Buffalo, N. Y.
Taco Heaters, Inc., Cranston, R. I.
Trane Co., The, LaCrosse, Wis.
Union Steam Pump Co., Battle Creek, Mich.
United Centrifugal Pumps, Oakland, Calif.
Valley Foundry & Machine Works, Inc., Fresno, Calif.

Vanton Pump & Equipment Corp., Hillside, N. J.
Warren Pumps, Inc., Warren, Mass.
Wayne Pump Co., Div. of Symington Wayne Corp., Ft. Wayne, Ind.
Weil Pump Co., Chicago, Ill.
Weinman Pump Mfg. Co., The, Columbus.
Wheeler Mfg. Co., C. H., Philadelphia, Pa.
Wheeler Mfg. Co., C. H., Economy Pump Div., Philadelphia, Pa.
Whitewater Pump Co., Inc., Whitewater, Wis.
Wilson-Snyder Wks., Oil Well Supply Div., U. S. Steel Corp., Braddock, Pa.
Wintroath Pumps, Div. of Worthington Corp., Alhambra, Calif.
Worthington Corp., East Orange, N. J.
Yeomans Bros. Co., Melrose Park, Ill.

PUMPS, CONDENSATE, FOR REMOVING CONDENSATION FROM AIR CONDITIONING UNITS

For removal of water condensed from air on cooling and dehumidifying coils. For Condensate Return Pumps, see Pumps, Condensate Return. For Air Conditioning Pumps, see Pumps of various types, such as pumps, Centrifugal and others

Ashcraft Co., J. P., Dallas, Tex.
Beach-Russ Co., New York, N. Y.
Buffalo Pumps, Div. of Buffalo Forge Co., Buffalo, N. Y.
Byron Jackson Pumps, Inc., A Subsid. of Borg-Warner Corp., Los Angeles, Calif.
Davidson Co., M. T., New York, N. Y.
Deming Co., Salem, O.
Eastern Industries, Inc., Hamden, Conn.
Eddington Metal Specialty Co., Eddington, Pa.
Gelber & Sons, Inc., S., Chicago, Ill.
Goulds Pumps, Inc., Seneca Falls, N. Y.
Johnston Pump Co., A Div. of the Youngstown Sheet & Tube Co., Pasadena, Calif.
Kenco Pump Div., American Crucible Products Co., Lorain, O.
Little Giant Pump Co., Div. of Little Giant Vaporizer Co., Inc., Oklahoma City, Okla.
March Mfg. Co., Inc., Skokie, Ill.
Midwest Pump Div. of Sherwood Mfg. Co., Independence, Mo.
Myers & Bro. Co., F. E., The, Ashland, O.
Nash Engineering Co., South Norwalk, Conn.
Oberdorfer Foundries, Inc., Syracuse, N. Y.
Palmer Electric Co., Inc., Detroit, Mich.
Sterling, Inc., Milwaukee, Wis.
Warren Pumps, Inc., Warren, Mass.
Weil Pump Co., Chicago, Ill.
Weinman Pump Mfg. Co., The, Columbus, O.

PUMPS, CONDENSATE RETURN

Advance Pump Co., Berkeley, Calif.
Allis-Chalmers Mfg. Co., Milwaukee, Wis.
American Comfort Mfg. Co., Evanston, Ill.
American Hydrovac, Div. Pitz Foundry, Inc., Brooklyn, N. Y.
American Marsh Pumps, Inc., Battle Creek, Mich.
Aurora Pump Div., The New York Air Brake Co., Aurora, Ill.
Barnes & Jones, Inc., Newtonville, Mass.
Beckett & Co., Inc., Thomas, Dallas, Tex.
Buffalo Pumps, Div. of Buffalo Forge Co., Buffalo, N. Y.
Byron Jackson Pumps, Inc., A Subsidiary of Borg-Warner Corp., Los Angeles, Calif.
Canton Stoker Corp., Canton, O.
Chempump Corp., Philadelphia, Pa. (canned motors)
Chicago Pump Co., Subsidiary of Food Machinery & Chemical Corp., Chicago, Ill.
Cissell Mfg. Co., Inc., W. M., Louisville, Ky.
Cochrane Corp., Philadelphia, Pa.
Coffin Co., J. S., Jr., Englewood, N. J.
Columbus Steam Pump Wks. Co., Columbus, O.
Davidson Co., M. T., New York, N. Y.
Dean Brothers Pumps, Inc., Indianapolis, Ind.
Dean Hill Pump Co., Indianapolis, Ind.
Decatur Pump Co., Decatur, Ill.
Deming Co., Salem, O.
Domestic Pump & Mfg. Corp., Shippensburg, Pa.
Dunham-Bush, Inc., West Hartford, Conn.
Eagan Co., Inc., Walter H., Philadelphia, Pa.
Eastern Industries, Inc., Hamden, Conn.
Eclipse Fuel Engineering Co., Rockford, Ill.
Faber Engineering Co., Inc., Norristown, Pa.
Fairbanks, Morse & Co., Chicago, Ill.
Federal Pump Corp., Brooklyn, N. Y.
Foster Wheeler Corp., New York, N. Y.
Frederick Iron & Steel Inc., Frederick, Md.
Goulds Pumps, Inc., Seneca Falls, N. Y.
Heating Assurance, Inc., Spokane, Wash.
Hoffman Specialty Mfg. Corp., Indianapolis, Ind.
Illinois Engineering Products, American Air Filter Co., Inc., Louisville, Ky.
Ingersoll-Rand Co., New York, N. Y.
Johnson Corp., The, Three Rivers, Mich.
Johnston Pump Co., A Div. of the Youngstown Sheet & Tube Co., Pasadena, Calif.
Kisco Boiler & Engineering Co., St. Louis.
Lattner Mfg. Co., P. M., Cedar Rapids, Iowa
Lawrence Pump & Engine Co., Lawrence, Mass.
Leyman Mfg. Corp., John H. McGowan Co. Div., Cincinnati, O.
Mears-Kane-Ofeldt, Inc., Div. S. T. Johnson Co., Bridgeport, Pa.
Myers & Bro. Co., F. E., The, Ashland, O.
Nash Engineering Co., South Norwalk, Conn.
Pacific Pumping Co., Oakland, Calif.
Palmer Electric Co., Inc., Detroit, Mich.
Peerless Pump Div., Food Machinery & Chemical Corp., Los Angeles, Calif.
Penberthy Mfg. Co., Div. of Buffalo Eclipse Corp., Detroit, Mich.
Pennsylvania Pump & Compressor Co., Easton, Pa.
Roth Co., Roy E., Rock Island, Ill.
Sarco Co., Inc., New York, N. Y.
Schaub Engineering Co., Fred H., Chicago.
Sellers Engineering Co., Chicago, Ill.
Skidmore Corp., St. Joseph, Mich.
Sta-Rite Products, Inc., Delavan, Wis.
Sterling, Inc., Milwaukee, Wis.
Stout & Sons, David, St. Louis, Mo.
Swaby Mfg. Co., Chicago, Ill.
Trane Co., The, LaCrosse, Wis.
Union Steam Pump Co., Battle Creek, Mich.
Universal Mfg. Co., Berkeley, Calif.
Warren Pumps, Inc., Warren, Mass.
Weil Pump Co., Chicago, Ill.
Weinman Pump Mfg. Co., The, Columbus, O.
Wheeler Mfg. Co., C. H., Economy Pump Div., Philadelphia, Pa.
Whittington Pump & Engineering Corp., Indianapolis, Ind.
Worthington Corp., East Orange, N. J.
Yeomans Bros. Co., Melrose Park, Ill.

PUMPS, CONTROLLED VOLUME

Allis-Chalmers Mfg. Co., Milwaukee, Wis.
Clark-Cooper Co., Inc., C C Pump Div., Palmyra, N. J.
Dearborn Chemical Co., Chicago, Ill.
Eagan Co., Inc., Walter H., Philadelphia, Pa.
Hills-McCanna Co., Chicago, Ill.
Lapp Insulator Co., LeRoy, N. Y.
Madden Corp., The, Chicago, Ill.
Milton Roy Co., Philadelphia, Pa.
Philadelphia Pump Div., American Meter Co., Philadelphia, Pa.
Wallace & Tiernan, Inc., Belleville, N. J.

PUMPS, DEEP WELL

Advance Pump Co., Berkeley, Calif.
American Well Wks., Aurora, Ill.
Aurora Pump Div., The New York Air Brake Co., Aurora, Ill.
Berkeley Pump Co., Berkeley, Calif.
Byron Jackson Pumps, Inc., A Subsidiary of Borg-Warner Corp., Los Angeles, Calif.
Davidson Co., M. T., New York, N. Y.
Decatur Pump Co., Decatur, Ill. (shallow well)
Deming Co., Salem, O.
Duro Co., Dayton, O.
Fairbanks, Morse & Co., Chicago, Ill.
Ingersoll-Rand Co., New York, N. Y.
Johnston Pump Co., A Div. of the Youngstown Sheet & Tube Co., Pasadena, Calif.
Lancaster Pump & Mfg. Co., Lancaster, Pa. (submersible)
Layne & Bowler, Inc., Memphis, Tenn.
McDonald Mfg. Co., A. Y., Dubuque, Ia.
Peerless Pump Div., Food Machinery & Chemical Corp., Los Angeles, Calif.
Red Jacket Mfg. Co., Davenport, Ia.
Sta-Rite Products, Inc., Delavan, Wis.
Sumo Pumps, Inc., Stamford, Conn.
Uniflow Mfg. Co., Erie, Pa.
Wintroath Pump, Div. of Worthington Corp., Alhambra, Calif.
Worthington Corp., East Orange, N. J.

PUMPS, EVAPORATIVE COOLER

Aurora Pump Div., The New York Air Brake Co., Aurora, Ill.
Beckett & Co., Inc., Thomas, Dallas, Tex.
Buffalo Pumps, Div. of Buffalo Forge Co., Buffalo, N. Y.
Carver Pump Co., Muscatine, Ia.
Chempump Corp., Philadelphia, Pa. (canned motors)
Deming Co., Salem, O.
Eagan Co., Inc., Walter H., Philadelphia, Pa.
Essick Mfg. Co., Los Angeles, Calif.
Goulds Pumps, Inc., Seneca Falls, N. Y.
Ingersoll-Rand Co., New York, N. Y.
International Metal Products, Phoenix, Ariz.
Jabsco Pump Co., Burbank, Calif.
Krueger Air Conditioning Co., Tucson, Ariz.
Little Giant Pump Co., Div. of Little Giant Vaporizer Co., Inc., Oklahoma City, Okla.
Midwest Pump Div. of Sherwood Mfg. Co., Independence, Mo.
Myers & Bro. Co., F. E., The, Ashland, O.
Oberdorfer Foundries, Inc., Syracuse, N. Y.
Pacific Pumping Co., Oakland, Calif.
Palmer Electric Co., Inc., Detroit, Mich.
Peerless Pump Div., Food Machinery & Chemical Corp., Los Angeles, Calif.
Ruthman Machinery Co., Cincinnati, O.
Taco Heaters, Inc., Cranston, R. I.
Thermador Electrical Mfg., Los Angeles, Calif.
Warren Pumps, Inc., Warren, Mass.
Weinman Pump Mfg. Co., The, Columbus, O.
Wright Mfg. Co., Phoenix, Ariz.

PUMPS, FIRE

Allis-Chalmers Mfg. Co., Milwaukee, Wis.
Aurora Pump Div., The New York Air Brake Co., Aurora, Ill.
Barnes Manufacturing Co., Mansfield, O.
Buffalo Pumps, Div. of Buffalo Forge Co., Buffalo, N. Y.
Chicago Pump Co., Subsidiary of Food Machinery & Chemical Corp., Chicago, Ill.
Davidson Co., M. T., New York, N. Y.
De Laval Steam Turbine Co., Trenton, N. J.
Fairbanks, Morse & Co., Chicago, Ill.
Frederick Iron & Steel Inc., Frederick, Md.
Gardner-Denver Co., Quincy, Ill.
Gorman-Rupp Co., Mansfield, O.
Goulds Pumps, Inc., Seneca Falls, N. Y.
Ingersoll-Rand Co., New York, N. Y.
Layne & Bowler, Inc., Memphis, Tenn.
Lecourtenay Co., Newark, N. J.
Marlow Pumps, Division of Bell & Gossett Co., Midland Park, N. J.
Myers & Bro. Co., F. E., The, Ashland, O.
Oberdorfer Foundries, Inc., Syracuse, N. Y.
Pacific Pumping Co., Oakland, Calif.
Peerless Pump Div., Food Machinery & Chemical Corp., Los Angeles, Calif.
Royalton Co., Inc., Gasport, N. Y.
Solar Aircraft Co., San Diego, Calif. (gas turbine)
Universal Mfg. Co., Berkeley, Calif.
Viking Pump Co., Cedar Falls, Ia.
Warren Pumps, Inc., Warren, Mass.
Wheeler Mfg. Co., C. H., Economy Pump Div., Philadelphia, Pa.
Worthington Corp., East Orange, N. J.

PUMPS, GEAR

American Hard Rubber Co., Div. of Amerace Corp., Butler, N. J.
DeLaval Steam Turbine Co., Trenton, N. J.
Eastern Industries, Inc., Hamden, Conn.
Eco Engineering Co., Newark, N. J.
Fulflo Specialties Co., Inc., The, Blanchester, O.
Granberg Corp., Oakland, Calif.
Kalamazoo Div., New York Air Brake Co., Kalamazoo, Mich. (hydraulic)
Mechanical Products Corp., Chicago, Ill.
Myers & Bro. Co., F. E., The, Ashland, O.
Northern Ordnance Inc., Subsidiary of Northern Pump Co., Minneapolis, Minn.
Oberdorfer Foundries, Inc., Syracuse, N. Y.
Roper Hydraulics, Inc., Rockford, Ill.
Schutte & Koerting Co., Cornwells Heights, Bucks County, Pa.
Sier Bath Gear & Pump Co., Inc., North Bergen, N. J.
Tuthill Pump Co., Chicago, Ill.
Viking Pump Co., Cedar Falls, Ia.
Warren Pumps, Inc., Warren, Mass.
Webster Electric Co., Racine, Wis.
Worthington Corp., East Orange, N. J.

PUMPS, HIGH PRESSURE, HYDRAULIC

Aldrich Pump Co., Allentown, Pa.
American Engineering Co., Philadelphia, Pa.

American Instrument Co., Inc., Silver Spring, Md.
American-Marsh Pumps, Inc., Battle Creek, Mich.
Autoclave Engineers Sales Corp., Erie, Pa.
Blackhawk Mfg. Co., Milwaukee, Wis.
Byron Jackson Pumps, Inc., A Subsidiary of Borg-Warner Corp., Los Angeles, Calif.
Canton Stoker Corp., Canton, O.
Clark-Cooper Co., Inc., C C Pump Div., Palmyra, N. J.
Coffin Co., J. S., Jr., Englewood, N. J.
Commercial Shearing & Stamping Co., Youngstown, O.
Davidson Co., M. T., New York, N. Y.
Dean Brothers Pumps, Inc., Indianapolis, Ind.
De Laval Steam Turbine Co., Trenton, N. J.
Deming Co., Salem, O.
Dudgeon, Inc., Richard, Brooklyn, N. Y.
Eagan Co., Inc., Walter H., Philadelphia, Pa.
Eastern Industries, Inc., Hamden, Conn.
Gorman-Rupp Co., Mansfield, O.
Gray Co., Inc., Minneapolis, Minn.
Greenlee Tool Co., Div. of Greenlee Bros. & Co., Rockford, Ill.
Henderer's Sons, A. L., Wilmington, Del.
Kalamazoo Div., New York Air Brake Co., Kalamazoo, Mich.
Kobe Inc., Huntington Park, Calif.
LeCourtenay Co., Newark, N. J.
Ledeen Mfg. Co., El Monte, Calif.
Milton Roy Co., Philadelphia, Pa.
Myers & Bro., Co., F. E. The, Ashland, O.
National Steam Pump Co., Upper Sandusky, O.
Northern Ordnance Inc., Subsidiary of Northern Pump Co., Minneapolis, Minn.
Nye Tool Co., Chicago, Ill.
Philadelphia Pump Div., American Meter Co., Philadelphia, Pa.
Porter Co., Inc., H. K., Forge & Fittings Div., W-S Fittings Wks., Roselle, N. J.
Robbins & Myers, Inc., Springfield, O.
Roper Hydraulics, Inc., Rockford, Ill.
Royalton Co., Inc., Gasport, N. Y.
Sier Bath Gear & Pump Co., Inc., North Bergen, N. J.
Tuthill Pump Co., Chicago, Ill.
Union Steam Pump Co., Battle Creek, Mich.
United Centrifugal Pumps, Oakland, Calif.
Viking Pump Co., Cedar Falls, Ia.
Warren Pumps, Inc., Warren, Mass.
Webster Electric Co., Racine, Wis.
Wilson Co., K. R., Arcade, N. Y.
Worthington Corp., East Orange, N. J.

PUMPS, HYDROSTATIC TEST, HAND-OPERATED

Autoclave Engineers Sales Corp., Erie, Pa.
Deming Co., Salem, O.
Dudgeon, Inc., Richard, Brooklyn, N. Y.
Henderer's Sons, A. L., Wilmington, Del.
Pacific Pumping Co., Oakland, Calif.
Porter Co., Inc., H. K., Forge & Fittings Div., W-S Fittings Wks., Roselle, N. J.

PUMPS, JET

Advance Pump Co., Berkeley, Calif.
Aurora Pump Div., The New York Air Brake Co., Aurora, Ill.
Barnes Mfg. Co., Mansfield, O.
Berkeley Pump Co., Berkeley, Calif.
Clayton Mark & Co., Evanston, Ill.
Decatur Pump Co., Decatur, Ill.
Deming Co., Salem, O.
Duro Co., The, Dayton, O.
Everite Pump & Mfg. Co., Lancaster, Pa.
Goulds Pumps, Inc., Seneca Falls, N. Y.
Lancaster Pump & Mfg. Co., Lancaster, Pa.
McDonald Mfg. Co., A. Y., Dubuque, Ia.
Myers & Bro. Co., F. E., The, Ashland, O.
Pacific Pumping Co., Oakland, Calif.
Palmer Electric Co., Inc., Detroit, Mich.
Peerless Pump Div., Food Machinery & Chemical Corp., Los Angeles, Calif.
Penberthy Mfg. Co., Div. of Buffalo Eclipse Corp., Detroit, Mich.
Red Jacket Mfg. Co., Davenport, Ia.
Schutte & Koerting Co., Cornwells Heights, Bucks County, Pa.
Sta-Rite Products, Inc., Delavan, Wis.
Uniflow Mfg. Co., Erie, Pa.
Universal Mfg. Co., Berkeley, Calif.
Whitewater Pump Co., Inc., Whitewater, Wis.
Whittington Pump & Engineering Corp., Indianapolis, Ind.

PUMPS, LIQUID REFRIGERANT CIRCULATING

American-Marsh Pumps, Inc., Battle Creek, Mich.
Aurora Pump Div., The New York Air Brake Co., Aurora, Ill.
Buffalo Pumps, Div. of Buffalo Forge Co., Buffalo, N. Y.
Byron Jackson Pumps, Inc., A Subsid. of Borg-Warner Corp., Los Angeles, Calif.
Canton Stoker Corp., Canton, O.
Chempump Corp., Philadelphia, Pa. (canned motors)
Chicago Pump Co., Subsidiary of Food Machinery & Chemical Corp., Chicago, Ill.
Corley Co., Inc., The, Plainville, Conn.
Dean Brothers Pumps, Inc., Indianapolis, Ind.
Eagan Co., Inc., Walter H., Philadelphia, Pa.
Fairbanks, Morse & Co., Chicago, Ill.
Frick Co., Waynesboro, Pa.
Goulds Pumps, Inc., Seneca Falls, N. Y.
Heatron, Inc., York, Pa.
Ingersoll-Rand Co., New York, N. Y.
Lawrence Pump & Engine Co., Lawrence, Mass.
LeCourtenay Co., Newark, N. J.
Myers & Bro. Co., F. E., The, Ashland, O.
Peerless Pump Div., Food Machinery & Chemical Corp., Los Angeles, Calif.
Roper Hydraulics, Inc., Rockford, Ill.
Roth Co., Roy E., Rock Island, Ill.
Union Steam Pump Co., Battle Creek, Mich.
Universal Mfg. Co., Berkeley, Calif.
Viking Pump Co., Cedar Falls, Ia.
Vilter Mfg. Co., Milwaukee, Wis.
Warren Pumps, Inc., Warren, Mass.
Watkins Co., J. E., Maywood, Ill.
Weinman Pump Mfg. Co., The, Columbus, O.
Wheeler Mfg. Co., C. H., Economy Pump Div., Philadelphia, Pa.
Worthington Corp., East Orange, N. J.
York Corp., Subsidiary of Borg-Warner Corp., York, Pa.

PUMPS, PROPELLER

Allis-Chalmers Mfg. Co., Milwaukee, Wis.
American Well Works, Aurora, Ill.
Byron Jackson Pumps, Inc., A Subsidiary of Borg-Warner Corp., Los Angeles, Calif.
Chempump Corp., Philadelphia, Pa.
Everite Pump & Mfg. Corp., Lancaster, Pa.
Fairbanks, Morse & Co., Chicago, Ill.
Frederick Iron & Steel Inc., Frederick, Md.
Ingersoll-Rand Co., New York, N. Y.
Jabsco Pump Co., Burbank, Calif.
Johnston Pump Co., A Div. of the Youngstown Sheet & Tube Co., Pasadena, Calif.
Ladish Co., Tri-Clover Div., Kenosha, Wis.
Lawrence Pumps, Inc., Lawrence, Mass.
Pacific Pumping Co., Oakland, Calif.
Peerless Pump Div., Food Machinery & Chemical Corp., Los Angeles, Calif.
Ruthman Machinery Co., Cincinnati, O.
Universal Mfg. Co., Berkeley, Calif.
Warren Pumps, Inc., Warren, Mass.
Worthington Corp., East Orange, N. J.

PUMPS, PROPORTIONING

American Instrument Co., Inc., Silver Spring, Md.
Bird-Archer Co., Philadelphia, Pa.
Bruner Corp., Milwaukee, Wis.
Clark-Cooper Co., Inc., C C Pump Div., Palmyra, N. J.
Dearborn Chemical Co., Chicago, Ill.
Eagan Co., Inc., Walter H., Philadelphia, Pa.
Hills-McCanna Co., Chicago, Ill.
Lapp Insulator Co., LeRoy, N. Y.
Madden Corp., The, Chicago, Ill.
Marco Development Co., Inc., Wilmington, Del.
Mechanical Products Corp., Chicago, Ill.
Metropolitan Refining Co., Inc., Long Island City, N. Y.
Milton Roy Co., Philadelphia, Pa.
Myers & Bro. Co., F. E., The, Ashland, O.
Pacific Pumping Co., Oakland, Calif.
Philadelphia Pump Div., American Meter Co., Philadelphia, Pa.
Proportioneers, Inc., Div. of B-I-F Industries, Inc., Providence, R. I.
Robbins & Myers, Inc., Springfield, O.
Texstream Corp., Houston, Tex.
Universal Mfg. Co., Berkeley, Calif.
Vanton Pump & Equipment Corp., Hillside, N. J.
Wallace & Tiernan Inc., Belleville, N. J.
Whittaker Controls, A Div. of Telecomputing Corp., Los Angeles, Calif.

PUMPS, RECIPROCATING

Aldrich Pump Co., Allentown, Pa.
American Hard Rubber Co., Div. of Amerace Corp., Butler, N. J. (Rubber and Rubber lined)
American-Marsh Pumps, Inc., Battle Creek, Mich.
Barnes Mfg. Co., Mansfield, O.
Canton Stoker Corp., Canton, O.
Champion Pneumatic Machinery Co., Princeton, Ill.
Clark-Cooper Co., Inc., C C Pump Div., Palmyra, N. J.
Clayton Mark & Co., Evanston, Ill.
Columbus Steam Pump Wks. Co., Columbus, O.
Davidson Co., M. T., New York, N. Y.
Dean Brothers Pumps, Inc., Indianapolis, Ind.
Dearborn Chemical Co., Chicago, Ill.
Deming Co., Salem, O.
Duro Co., Dayton, O.
Everite Pump & Mfg. Corp., Lancaster, Pa.
Fairbanks, Morse & Co., Chicago, Ill.
Gardner-Denver Co., Quincy, Ill.
Goulds Pumps, Inc., Seneca Falls, N. Y.
Gray Company, Inc., Minneapolis, Minn.
Lancaster Pump & Mfg. Co., Lancaster, Pa.
Ledeen Mfg. Co., El Monte, Calif.
Leyman Mfg. Corp., John H. McGowan Co. Div., Cincinnati, O.
McDonald Mfg. Co., A. Y., Dubuque, Ia.
Milton Roy Co., Philadelphia, Pa.
Myers & Bro. Co., F. E., The, Ashland, O.
National Steam Pump Co., Upper Sandusky, O.
Novo Pump and Engine Co., Lansing, Mich.
Red Jacket Mfg. Co., Davenport, Ia.
Ross Valve Mfg. Co., Inc., Troy, N. Y.
Royalton Co., Inc., Gasport, N. Y.
Sta-Rite Products, Inc., Delavan, Wis.
Uniflow Mfg. Co., Erie, Pa.
Union Steam Pump Co., Battle Creek, Mich.
Warren Pumps, Inc., Warren, Mass.
Whitewater Pump Co., Inc., Whitewater, Wis.
Worthington Corp., East Orange, N. J.

PUMPS, ROTARY

American Engineering Co., Philadelphia, Pa.
American Hard Rubber Co., Div. of Amerace Corp., Butler, N. J. (Rubber and rubber lined)
Beach-Russ Co., New York, N. Y.
Becher Pump Co., Chicago, Ill.
Binks Mfg. Co., Chicago, Ill.
Blackmer Pump Co., Grand Rapids, Mich.
Chicago Pneumatic Tool Co., New York.
De Laval Steam Turbine Co., Trenton, N. J.
Deming Co., Salem, O.
Eagan Co., Inc., Walter H., Philadelphia, Pa.
Eastern Industries, Inc., Hamden, Conn.
Eco Engineering Co., Newark, N. J.
Eisler Engineering Co., Inc., Newark, N. J.
Fairbanks, Morse & Co., Chicago, Ill.
Federal Pump Corp., Brooklyn, N. Y.
Foster Pump Wks., Inc., Brooklyn, N. Y.
Goulds Pumps, Inc., Seneca Falls, N. Y.
Granberg Corp., Oakland, Calif.
Hauck Mfg. Co., Brooklyn, N. Y.
Jabsco Pump Co., Burbank, Calif.
Kinney Mfg. Div., The New York Air Brake Co., Boston, Mass.
Kraissl Co., Inc., The, Hackensack, N. J.
Lammert & Mann Co., Chicago, Ill.
Leiman Bros., Inc., Newark, N. J.
Marco Development Co., Inc., Wilmington, Del.
McDonald Mfg. Co., A. Y., Dubuque, Ia.
Nash Engineering Co., South Norwalk, Conn.
Northern Ordnance Inc., Subsidiary of Northern Pump Co., Minneapolis, Minn.
Oberdorfer Foundries, Inc., Syracuse, N. Y.
Procon Pump & Engineering Co., Oak Park, Mich.
Robbins & Myers, Inc., Springfield, O.
Roots-Connersville Blower, Div. of Dresser Industries, Inc., Connersville, Ind.
Roper Hydraulics, Inc., Rockford, Ill.
Roth Co., Roy E., Rock Island, Ill.
St. Louis Tool Co., St. Louis, Mo.
Schutte and Koerting Co., Cornwells Heights, Bucks County, Pa.
Sethco Mfg. Co., Merrick, N. Y. (with filter for acids)
Sier Bath Gear & Pump Co., Inc., North Bergen, N. J.
Sumo Pumps, Inc., Stamford, Conn.
Sundstrand Hydraulic Div., Rockford, Ill. (for oil burners high and low pressure)

Sutorbilt Corp., Subsidiary of Fuller Co., Compton, Calif.
Taber Pump Co., Buffalo, N. Y.
Tuthill Pump Co., Chicago, Ill.
Ulrich Mfg. Co., Bump Pump Div., Roanoke, Ill.
Vanton Pump and Equipment Corp., Hillside, N. J.
Viking Pump Co., Cedar Falls, Ia.
Warren Pumps, Inc., Warren, Mass.
Waukesha Foundry Co., Waukesha, Wis.
Wayne Pump Co., Div. of Symington Wayne Corp., Ft. Wayne, Ind.
Webster Electric Co., Racine, Wis. (unit pump for oil burners)
Worthington Corp., East Orange, N. J.
Yale & Towne Mfg. Co., White Plains, N. Y.

PUMPS, SEWAGE AND SLUDGE

Allis-Chalmers Mfg. Co., Milwaukee, Wis.
American-Marsh Pumps, Inc., Battle Creek, Mich.
American Well Works, Aurora, Ill.
Aurora Pump Div., The New York Air Brake Co., Aurora, Ill.
Barnes Manufacturing Co., Mansfield, O.
Becher Pump Co., Chicago, Ill.
Buffalo Pumps, Div. of Buffalo Forge Co., Buffalo, N. Y.
Byron Jackson Pumps, Inc., A Subsid. of Borg-Warner Corp., Los Angeles, Calif.
Canton Stoker Corp., Canton, O.
Chicago Pneumatic Tool Co., New York, N. Y.
Chicago Pump Co., Subsidiary of Food Machinery & Chemical Corp., Chicago, Ill.
Davidson Co., M. T., New York, N. Y.
Deming Co., Salem, O.
Fairbanks, Morse & Co., Chicago, Ill.
Frederick Iron & Steel Inc., Frederick, Md.
Gardner-Denver Co., Quincy, Ill.
Gelber & Sons, Inc., S., Chicago, Ill.
Gorman-Rupp Co., Mansfield, O.
Ingersoll-Rand Co., New York, N. Y.
Jabsco Pump Co., Burbank, Calif.
Lawrence Pumps, Inc., Lawrence, Mass.
Marlow Pumps, Division of Bell & Gossett Co., Midland Park, N. J.
Pacific Pumping Co., Oakland, Calif.
Palmer Electric Co., Inc., Detroit, Mich.
Peerless Pump Div., Food Machinery & Chemical Corp., Los Angeles, Calif.
Robbins & Myers, Inc., Springfield, O.
Swaby Mfg. Co., Chicago, Ill.
Universal Mfg. Co., Berkeley, Calif.
Warren Pumps, Inc., Warren, Mass.
Weil Pump Co., Chicago, Ill.
Weinman Pump Mfg. Co., The, Columbus, O.
Wheeler Mfg. Co., C. H., Economy Pump Div., Philadelphia, Pa.
Whittington Pump & Engineering Corp., Indianapolis, Ind.
Worthington Corp., East Orange, N. J.
Yeomans Bros. Co., Melrose Park, Ill.

PUMPS, SEWAGE AND SLUDGE, SUBMERSIBLE

American Well Wks., Aurora, Ill.
Buffalo Pumps, Div. of Buffalo Forge Co., Buffalo, N. Y.
Byron Jackson Pumps, Inc., A Subsid. of Borg-Warner Corp., Los Angeles, Calif.
Chicago Pneumatic Tool Co., New York.
Fairbanks, Morse & Co., Chicago, Ill.
Ferro Corp., Cleveland, O. (Compressed air operated)
Kenco Pump Div., American Crucible Products Co., Lorain, O.
Lancaster Pump & Mfg. Co., Lancaster, Pa.
Lawrence Pumps, Inc., Lawrence, Mass.
Pacific Pumping Co., Oakland, Calif.
Robbins & Myers, Inc., Springfield, O.
Universal Mfg. Co., Berkeley, Calif.
Weil Pump Co., Chicago, Ill.
Weinman Pump Mfg. Co., Columbus, O.
Worthington Corp., East Orange, N. J.
Yeomans Bros. Co., Melrose Park, Ill.

PUMPS, STEAM

American-Marsh Pumps, Inc., Battle Creek, Mich.
Canton Stoker Corp., Canton, O.
Coffin Co., J. S., Jr., Englewood, N. J.
Columbus Steam Pump Wks. Co., Columbus, O.
Davidson Co., M. T., New York, N. Y.
Dean Brothers Pumps, Inc., Indianapolis, Ind.
Gardner-Denver Co., Quincy, Ill.
Leyman Mfg. Corp., John H. McGowan Co. Div., Cincinnati, O.
National Steam Pump Co., Upper Sandusky, O.
Novo Pump & Engine Co., Lansing, Mich
Penberthy Mfg. Co., Div. of Buffalo Eclipse Corp., Detroit, Mich.
Union Steam Pump Co., Battle Creek, Mich.
Universal Mfg. Co., Berkeley, Calif.
Warren Pumps, Inc., Warren, Mass.
Worthington Corp., East Orange, N. J.

PUMPS, SUMP

Allis-Chalmers Mfg. Co., Milwaukee, Wis.
American-Marsh Pumps, Inc., Battle Creek, Mich.
Aurora Pump Div., The New York Air Brake Co., Aurora, Ill.
Barnes Mfg. Co., Mansfield, O.
Barrett Haentjens & Co., Hazleton, Pa.
Berkeley Pump Co., Berkeley, Calif.
Bruner Corp., Milwaukee, Wis.
Buffalo Pumps, Div. of Buffalo Forge Co., Buffalo, N. Y.
Byron Jackson Pumps, Inc., A Subsidiary of Borg-Warner Corp., Los Angeles, Calif.
Chicago Pneumatic Tool Co., New York.
Chicago Pump Co., Subsidiary of Food Machinery & Chemical Corp., Chicago, Ill.
Davidson Co., M. T., New York, N. Y.
Dayton Electric Mfg. Co., Chicago, Ill.
Decatur Pump Co., Decatur, Ill.
Deming Co., Salem, O.
DeVilbiss Metal Fabricators Co., Detroit, Mich.
Duro Co., Dayton, O.
Eagan Co., Inc., Walter H., Philadelphia, Pa.
Eastern Industries, Inc., Hamden, Conn.
Everite Pump & Mfg. Corp., Lancaster, Pa.
Fairbanks, Morse & Co., Chicago, Ill.
Federal Pump Corp., Brooklyn, N. Y.
Frederick Iron & Steel Inc., Frederick, Md.
Friermood Machine Works, Converse, Ind.
Gardner-Denver Co., Quincy, Ill.
Gelber & Sons, Inc., S., Chicago, Ill.
Gorman-Rupp Co., Mansfield, O.
Goulds Pump, Inc., Seneca Falls, N. Y.
Ingersoll-Rand Co., New York, N. Y.
Jabsco Pump Co., Burbank, Calif.
Johnston Pump Co., A Div. of the Youngstown Sheet & Tube Co., Pasadena, Calif.
Kenco Pump Div., American Crucible Products Co., Lorain, O.
Kol-Master Corp., Oregon, Ill
Lancaster Pump & Mfg. Co., Lancaster, Pa.
Lawrence Pumps, Inc., Lawrence, Mass.
Lawrence Pump & Engine Co., Lawrence, Mass.
Layne & Bowler, Inc., Memphis, Tenn.
Leyman Mfg. Corp., John H. McGowan Co. Div., Cincinnati, O.
Mall Tool Co., Div. of Remington Arms Co., Inc., Chicago, Ill.
Marlow Pumps, Division of Bell & Gossett Co., Midland Park, N. J.
Metalmaster Corp., Newark, N. J.
Myers & Bro. Co., F. E., The, Ashland, O.
Noera Mfg. Co., Div., Chase Brass & Copper Co., Waterbury, Conn.
Pacific Pumping Co., Oakland, Calif.
Palmer Electric Co., Inc., Detroit, Mich.
Peerless Pump Div., Food Machinery & Chemical Corp., Los Angeles, Calif.
Penberthy Mfg. Co., Div. of Buffalo Eclipse Corp., Detroit, Mich.
Radiant Utilities Corp., Brooklyn, N. Y.
Red Jacket Mfg. Co., Davenport, Ia.
Robbins & Myers, Inc., Springfield, O.
Roth Co., Roy E., Rock Island, Ill.
Schutte and Koerting Co., Cornwells Heights, Bucks County, Pa.
Sethco Mfg. Co., Merrick, N. Y. (all plastic)
Skidmore Corp., St. Joseph, Mich.
Standard Electric Mfg. Co., West Berlin, N. J.
Sta-Rite Products, Inc., Delavan, Wis.
Swaby Mfg. Co., Chicago, Ill.
Taber Pump Co., Buffalo, N. Y.
Thor Power Tool Co., Aurora, Ill.
Triplex Heating Specialty Co., Inc., Peru, Ind.
Uniflow Mfg. Co., Erie, Pa.
Union Steam Pump Co., Battle Creek, Mich.
Valley Foundry & Machine Works, Inc., Fresno, Calif.
Vanton Pump & Equipment Corp., Hillside, N. J.
Warren Pumps, Inc., Warren, Mass.
Weil Pump Co., Chicago, Ill.
Weinman Pump Mfg. Co., The, Columbus, O.
Wheeler Mfg. Co., C. H., Economy Pump Div., Philadelphia, Pa.
Whitewater Pump Co., Inc., Whitewater, Wis.
Wintroath Pumps, Div. of Worthington Corp., Alhambra, Calif.
Wire Products Co., Baltimore, Md.
Worthington Corp., East Orange, N. J.
Yeomans Bros. Co., Melrose Park, Ill.

PUMPS, SUMP, SUBMERSIBLE

Aurora Pump Div., The New York Air Brake Co., Aurora, Ill.
Barnes Mfg. Co., Mansfield, O.
Barrett Haentjens & Co., Hazleton, Pa.
Bruner Corp., Milwaukee, Wis.
Byron Jackson Pumps, Inc., A Subsidiary of Borg-Warner Corp., Los Angeles, Calif.
Dayton Electric Mfg. Co., Chicago, Ill
Decatur Pump Co., Decatur, Ill.
Deming Co., Salem, O.
Duro Co., The, Dayton, O.
Everite Pump & Mfg. Corp., Lancaster, Pa.
Fairbanks, Morse & Co., Chicago, Ill
Johnston Pump Co., A Div. of the Youngstown Sheet & Tube Co., Pasadena, Calif.
Kenco Pump Div., American Crucible Products Co., Lorain, O.
Lancaster Pump & Mfg. Co., Lancaster, Pa.
Lawrence Pumps, Inc., Lawrence, Mass.
Layne & Bowler, Inc., Memphis, Tenn.
Little Giant Pump Co., Div. of Little Giant Vaporizer Co., Inc., Oklahoma City, Okla.
Mall Tool Co., Div. of Remington Arms Co., Inc., Chicago, Ill.
McDonald Mfg. Co., A. Y., Dubuque, Ia.
Pacific Pumping Co., Oakland, Calif.
Penberthy Mfg. Co., Div. of Buffalo Eclipse Corp., Detroit, Mich.
Red Jacket Mfg. Co., Davenport, Ia.
Sta-Rite Products, Inc., Delavan, Wis.
Uniflow Mfg. Co., Erie, Pa.
Swaby Mfg. Co., Chicago, Ill.
Wayne Pump Co., Div. of Symington Wayne Corp., Ft. Wayne, Ind.
Weil Pump Co., Chicago, Ill.
Weinman Pump Mfg. Co., Columbus, O.
Whitewater Pump Co., Inc., Whitewater, Wis.
Whittaker Controls, A Div. of Telecomputing Corp., Los Angeles, Calif.
Worthington Corp., East Orange, N. J.

PUMPS, TURBINE TYPE

Advance Pump Co., Berkeley, Calif.
American-Marsh Pumps, Inc., Battle Creek, Mich.
American Wells Works, Aurora, Ill.
Aurora Pump Div., The New York Air Brake Co., Aurora, Ill.
Berkeley Pump Co., Berkeley, Calif.
Chicago Pump Co., Subsid. of Food Machinery & Chemical Corp., Chicago, Ill.
Coffin Co., J. S., Jr., Englewood, N. J.
Decatur Pump Co., Decatur, Ill.
Eagan Co., Inc., Walter H., Philadelphia, Pa.
Fairbanks, Morse & Co., Chicago, Ill.
Federal Pump Corp., Brooklyn, N. Y.
Fiese & Firstenberger Mfg., Inc., Fresno, Calif.
General Tire & Rubber Co., Akron, O.
Ingersoll-Rand Co., New York, N. Y.
Johnston Pump Co., A Div. of the Youngstown Sheet & Tube Co., Pasadena, Calif.
Lancaster Pump & Mfg. Co., Lancaster, Pa.
Layne & Bowler, Inc., Memphis, Tenn.
Pacific Pumping Co., Oakland, Calif.
Peerless Pump Div., Food Machinery & Chem. Corp., Los Angeles, Calif.
Roth Co., Roy E., Rock Island, Ill.
Skidmore Corp., St. Joseph, Mich.
Sta-Rite Products, Inc., Delavan, Wis.
Universal Mfg. Co., Berkeley, Calif.
Wintroath Pumps, Div. of Worthington Corp., Alhambra, Calif.
Weinman Pump Mfg. Co., The, Columbus, O.
Worthington Corp., East Orange, N. J.

PUMPS, VACUUM

Airserco Mfg. Co., Inc., Pittsburgh, Pa.
Allis-Chalmers Mfg. Co., Milwaukee, Wis.
American-Marsh Pumps, Inc., Battle Creek, Mich.
Atlas Copco Eastern, Inc., Paramus, N. J.
Barrett Haentjens & Co., Hazleton, Pa.
Beach-Russ Co., New York, N. Y.
Bury Compressor Co., Erie, Pa.
Canton Stoker Corp., Canton, O.
Chicago Pneumatic Tool Co., New York, N. Y.

Croll-Reynolds Engineering Co., Inc., New York, N. Y.
Davidson Co., M. T., New York, N. Y.
Dean Brothers Pumps, Inc., Indianapolis, Ind.
Devine Mfg. Co., Inc., J. P., Pittsburgh, Pa.
Domestic Pump & Mfg. Corp., Shippensburg, Pa.
Dunham-Bush, Inc., West Hartford, Conn.
Eagan Co., Inc., Walter H., Philadelphia, Pa.
Eisler Engineering Co., Inc., Newark, N. J.
Foster Pump Wks., Inc., Brooklyn, N. Y.
Foster Wheeler Corp., New York, N. Y.
Fuller Co., Catasaqua, Pa.
Gardner-Denver Co., Quincy, Ill.
Gelman Instrument Co., Chelsea, Mich.
General Ceramics Corp., Keasbey, N. J. (Chemical)
Granberg Corp., Oakland, Calif.
Ingersoll-Rand Co., New York, N. Y.
Jabsco Pump Co., Burbank, Calif.
Joy Mfg. Co., Pittsburgh, Pa.
Kinney Mfg. Div., The New York Air Brake Co., Boston, Mass.
Kraissl Co., Inc., The, Hackensack, N. J.
Lammert & Mann Co., Chicago, Ill.
Leiman Bros., Inc., Newark, N. J.
Leyman Mfg. Corp., John H. McGowan Co. Div., Cincinnati, O.
Nash Engineering Co., South Norwalk, Conn.
National Steam Pump Co., Upper Sandusky, O.
Oxygen Equipment & Service Co., Chicago, Ill.
Penberthy Mfg. Co., Div. of Buffalo Eclipse Corp., Detroit, Mich.
Pennsylvania Pump & Compressor Co., Easton, Pa.
Research Vacuum Supply Co., Chicago, Ill.
Roots-Connersville Blower, Div. of Dresser Industries, Inc., Connersville, Ind.
Schutte and Koerting Co., Cornwells Heights, Bucks County, Pa.
Skidmore Corp., St. Joseph, Mich.
Sutorbilt Corp., Subsidiary of Fuller Co., Compton, Calif.
Union Steam Pump Co., Battle Creek, Mich.
Viking Pump Co., Cedar Falls, Ia.
Wheeler Mfg. Co., C. H., Economy Pump Div., Philadelphia, Pa.
Whittington Pump & Engineering Corp., Indianapolis, Ind.
Will Corp., Rochester, N. Y.
Worthington Corp., East Orange, N. J.
Yeomans Bros. Co., Melrose Park, Ill.

PUMPS, VACUUM HEATING

American Hydrovac, Div. Pitz Foundry, Inc., Brooklyn, N. Y.
American-Marsh Pumps, Inc., Battle Creek, Mich.
Barnes & Jones, Inc., Newtonville, Mass.
Chicago Pump Co., Subsidiary of Food Machinery & Chemical Corp., Chicago, Ill.
Columbus Steam Pump Wks. Co., Columbus, O.
Davidson Co., M. T.. New York, N. Y.
Domestic Pump & Mfg. Corp., Shippensburg, Pa.
Dunham-Bush, Inc., West Hartford, Conn.
Eagan Co., Inc., Walter H., Philadelphia, Pa.
Faber Engineering Co., Inc., Norristown, Pa.
Gardner-Denver Co., Quincy, Ill.
Hoffman Specialty Mfg. Corp., Indianapolis, Ind.
Leyman Mfg. Corp., John H. McGowan Co. Div., Cincinnati, O.
Nash Engineering Co., South Norwalk, Conn.
National Steam Pump Co., Upper Sandusky, O.
Sarco Co., Inc., New York, N. Y.
Skidmore Corp., St. Joseph, Mich.
Union Steam Pump Co., Battle Creek, Mich.
Warren Pumps, Inc., Warren, Mass.
Wheeler Mfg. Co., C. H., Economy Pump Div., Philadelphia, Pa.
Whittington Pump & Engineering Corp., Indianapolis, Ind.
Worthington Corp., East Orange, N. J.

PUMPS, VISCOUS LIQUIDS AND HEAVY MATERIALS

Aldrich Pump Co., Allentown, Pa.
Allis-Chalmers Mfg. Co., Milwaukee, Wis.
American-Marsh Pumps, Inc., Battle Creek, Mich.
Beach-Russ Co., New York, N. Y.
Blackmer Pump Co., Grand Rapids, Mich.
Buffalo Pumps, Div. of Buffalo Forge Co., Buffalo, N. Y.
Byron Jackson Pumps, Inc., A Subsid. of Borg-Warner Corp., Los Angeles, Calif.
Canton Stoker Corp., Canton, O.
Chicago Pump Co., Subsidiary of Food Machinery & Chemical Corp., Chicago, Ill.
Clark-Cooper Co., Inc., C C Pump Div., Palmyra, N. J.
Columbus Steam Pump Wks. Co., Columbus, O.
Davidson Co., M. T., New York, N. Y.
Dean Brothers Pumps, Inc., Indianapolis, Ind.
De Laval Steam Turbine Co., Trenton, N. J.
Deming Co., Salem, O.
Eagan Co.. Inc., Walter H., Philadelphia, Pa.
Engineer Co., New York, N. Y.
Fairbanks, Morse & Co., Chicago, Ill.
Ferro Corp., Cleveland, O. (compressed air operated)
Foster Pump Wks., Inc., Brooklyn, N. Y.
Frederick Iron & Steel Inc., Frederick, Md.
Gardner-Denver Co., Quincy, Ill.
Goulds Pumps, Inc., Seneca Falls, N. Y.
Granberg Corp., Oakland, Calif.
Gray Co., Inc., Minneapolis, Minn.
Hetherington & Berner, Inc., Indianapolis, Ind. (jacketed)
Ingersoll-Rand Co., New York, N. Y.
Jabsco Pump Co., Burbank, Calif.
Kingsford Foundry & Machine Wks., Oswego, N. Y.
Kinney Mfg. Div., The New York Air Brake Co., Boston, Mass.
Kraissl Co., Inc., The, Hackensack, N. J.
Ladish Co., Tri-Clover Div., Kenosha, Wis.
Lawrence Pumps, Inc., Lawrence, Mass.
Lawrence Pump & Engine Co., Lawrence Mass.
Lecourtenay Co., Newark, N. J.
Leyman Mfg. Corp., John H. McGowan Co. Div., Cincinnati, O.
Madden Corp., The, Chicago, Ill.
Marco Development Co., Inc., Wilmington, Del.
Milton Roy Co., Philadelphia, Pa.
Myers & Bro. Co., F. E., The, Ashland, O.
Novo Pump & Engine Co., Lansing, Mich.
Peerless Pump Div., Food Machinery and Chemical Corp., Los Angeles, Calif.
Penberthy Mfg. Co., Div. of Buffalo Eclipse Corp., Detroit, Mich.
Philadelphia Pump Div., American Meter Co., Philadelphia, Pa.
Red Jacket Mfg. Co., Davenport, Ia.
Robbins & Myers, Inc., Springfield, O.
Rockwell Co., W. S., Fairfield, Conn.
Roots-Connersville Blower, Div. of Dresser Industries, Inc., Connersville, Ind.
Roper Hydraulics, Inc., Rockford, Ill.
Royalton Co., Inc., Gasport, N. Y.
Schutte and Koerting Co., Cornwells Heights, Bucks County, Pa.
Sier Bath Gear & Pump Co., Inc., North Bergen, N. J.
Taber Pump Co., Buffalo, N. Y.
Tuthill Pump Co., Chicago, Ill.
Ulrich Mfg. Co., Bump Pump Div., Roanoke, Ill.
Union Steam Pump Co., Battle Creek, Mich.
United Centrifugal Pumps, Oakland, Calif.
Universal Mfg. Co., Berkeley, Calif.
Vanton Pump & Equipment Corp., Hillside, N. J.
Viking Pump Co., Cedar Falls, Ia.
Warren Pumps, Inc., Warren, Mass.
Wayne Pump Co., Div. of Symington Wayne Corp., Ft. Wayne, Ind.
Weinman Pump Mfg. Co., Columbus, O.
Wheeler Mfg. Co., C. H., Economy Pump Div., Philadelphia, Pa.
Whittington Pump & Engineering Corp., Indianapolis, Ind.
Worthington Corp., East Orange, N. J.
Yeomans Bros. Co., Melrose Park, Ill.

PUNCHES, SHEET METAL

Billings & Spencer Co., Hartford, Conn.
Blackhawk Mfg. Co., Milwaukee, Wis.
Cleveland Punch & Shear Wks. Co., Cleveland, O.
Diamond Machine Tool Co., Pico, Calif.
Duro-Dyne Corp., Farmingdale, L. I., N. Y.
Duro Metal Products Co., Chicago, Ill.
Excelsior Tool & Machine Co., East St. Louis, Ill.
Greenlee Tool Co., Div. of Greenlee Bros. & Co., Rockford, Ill.
Hendley & Whittemore Co., Beloit, Wis.
Kidder Mfg. Co., Inc., J. F., Burlington, Vt.
Leslie Welding Co., Inc., Chicago, Ill.
M-M-A, Inc., Lancaster, Pa.
Milton Equipment Co., Philadelphia, Pa.
Niagara Machine & Tool Wks., Buffalo, N. Y.
Nye Tool Co., Chicago, Ill.
O'Neil-Irwin Mfg. Co., Lake City, Minn.
Peck, Stow & Wilcox Co., Southington, Conn.
Reiner & Campbell Co., Inc., Newark, N. J. (clips)
Ryerson & Son, Inc., Joseph T., Chicago, Ill.
Swaine Mfg. Co., Fred J., St. Louis, Mo.
Thor Tool & Die Co., San Leandro, Calif.
Webb Corp., The, Webb City, Mo.
Whitney Mfg. Co., W. A., Rockford, Ill.
Whitney Metal Tool Co., Rockford, Ill.
Weidemann Machine Co., Philadelphia, Pa.
Zeh & Hahnemann Co., Newark, N. J.

PURGERS, REFRIGERANT GAS

Armstrong Machine Works, Three Rivers, Mich.
Frick Co., Waynesboro, Pa.
Mueller Brass Co., Port Huron, Mich.
Reco Products Div., Recony Corp., New York, N. Y.
Vilter Mfg. Co., Milwaukee, Wis.
Watkins Co., J. E., Maywood, Ill.
York Corp., Subsidiary of Borg-Warner Corp., York, Pa.

PUSHERS, PIPE, HYDRAULIC

Blackhawk Mfg. Co., Milwaukee, Wis.
Dudgeon, Inc., Richard, Brooklyn, N. Y.
Giant Mfg. Co., Council Bluffs, Ia.
Greenlee Tool Co., Div. of Greenlee Bros. & Co., Rockford, Ill.
Hydraulic Mfg. Co., Bridgeport, Conn.
Mercury Hydraulics, Inc., Denver, Colo.
Wilson Co., K. R., Arcade, N. Y.

RACKS, STORAGE, PIPE

Acme Steel Co., Chicago, Ill. (slotted angle)
Adams Co., The, Dubuque, Ia.
Beaver Advance Corp., Ellwood City, Pa.
Bernard-Franklin Co., Inc., Philadelphia, Pa.
Bethlehem Steel Co., Bethlehem, Pa.
California Steel Products Div., Richmond, Calif.
Haertel Co., Walter, Minneapolis, Minn.
Industrial Tubular Equipment Co., North Hollywood, Calif.
Modern Hanger Corp., The, Cleveland, O.
Mult-A-Frame Div., Ainsworth Mfg. Corp., Detroit, Mich.
Palmer-Shile Co., Detroit, Mich.
Republic Steel Corp., Cleveland, O
Steel City Electric Co., Pittsburgh, Pa.
Unistrut Products Co., Chicago, Ill.
XXth Century Heating & Ventilating Co., The, Akron, O.

RADIANT HEAT MEASUREMENT

See Radiometers

RADIANT HEAT THERMOSTATS

See Thermostats, Radiant Heat

RADIANT HEATING AND COOLING CEILINGS

See Ceilings, Radiant, Heating and Cooling, and Acoustical Control

RADIANT HEATING AND COOLING

See Coils and Panels, Radiant Heating, Prefabricated

RADIANT HEATING ELECTRICAL CONDUCTORS

See Panels, Electric Heating

RADIATION, BASEBOARD, ELECTRIC HEATING ELEMENT

Acme Electric Heating Co., Boston, Mass.
Ampere Industries, Newark, N. J.
Berko Electric Mfg. Corp., Queens Village, N. Y.
Brown Products Corp., Union, N. J.
Ceilheat, Inc., Knoxville, Tenn.
Circle Air Industries, Inc., Brooklyn, N. Y.
Electriliving Corp., Indianapolis, Ind.

Electro Products Mfg. Co., Vancouver, Wash.
General Alliance Corp., San Diego, Calif.
General Electric Co., Wiring Device Dept., Providence, R. I.
Heatmore, Inc., Brooklyn, N. Y.
Hunter Div., Robbins & Myers, Inc., Memphis, Tenn.
LaSalle Products, Inc., Buffalo, N. Y.
Modernheat Cable Corp., Kingsport, Tenn.
Peerless of America, Inc., Chicago, Ill.
Ramco Mfg. and Engineering Co., Portland, Ore.
Roberson, Inc., Seattle, Wash.
Slant-Fin Radiator Corp., Richmond Hill, N. Y.
Spartan Convector Co., Inc., Maspeth, N. Y.
Sundial Electric Co., Richmond Hill, N. Y.
Sunwarm, Inc., Kingsport, Tenn.
Thermador Electrical Mfg., Los Angeles, Calif.
Vulcan Electric Co., Danvers, Mass.
Vulcan Radiator Co., Hartford, Conn.
Wesix Electric Heater Co., San Francisco.
Wiegand Co., E. L., Pittsburgh, Pa.

RADIATION, BASEBOARD, FERROUS

American Radiator & Standard Sanitary Corp., Plumbing & Heating Div., New York, N. Y.
Baseline Mfg. Corp. of Fla., St. Petersburg, Fla.
Burnham Corp., Irvington, N. Y.
Crane Co., Chicago, Ill.
Dunkirk Radiator Corp., Dunkirk, N. Y.
Edwards Engineering Corp., Pompton Plains, N. J.
Farrell Associates, Charles, Valencia, Pa.
Fedders-Quigan Corp., Heating Div., Trenton, N. J.
Kritzer Radiant Coils, Inc., Batavia, Ill.
Lee Vine Fin-Tube Radiator Co., Inc., New Haven, Conn.
National-U. S. **Radiator Corp., Johnstown, Pa.**
Radiant-Ray Radiation, Inc., Newington, Conn.
Rempe Co., Chicago, Ill.
Rittling Corp., The, Buffalo, N. Y.
Sarco Co., Inc., New York, N. Y.
Sarcotherm Controls, Inc., New York, N. Y.
Slant-Fin Radiator Corp., Richmond Hill, N. Y.
Sterling Radiator Co., Inc., Westfield, Mass.
Trane Co., The, La Crosse, Wis.
Tranter Mfg., Inc., Lansing, Mich.
Utica Radiator Corp., Utica, N. Y.
Vulcan Radiator Co., Hartford, Conn.
Weil-McLain Co., Michigan City, Ind.
Woodside Engineering Co., Franklin Park, Ill.

RADIATION, BASEBOARD, FITTINGS

For special fittings, see Fittings, Pipe, Special, for Baseboard Radiation

RADIATION, BASEBOARD, NON-FERROUS

American Radiator & Standard Sanitary Corp., Plumbing & Heating Div., New York, N. Y.
Argo Industries, Inc., Hartford, Conn.
Baseline Mfg. Co., Minneapolis, Minn.
Baseline Mfg. Corp. of Fla., St. Petersburg, Fla.
Beacon-Morris Corp., Boston, Mass.
Brown Products Corp., Union, N. J.
Columbia Boiler Company of Pottstown, Pottstown, Pa.
Continental Mfg. Co., Baltimore, Md.
Convector Corp., Washington, D. C.
Crane Co., Chicago, Ill.
Dunham-Bush, Inc., West Hartford, Conn.
Dunkirk Radiator Corp., Dunkirk, N. Y.
Edwards Engineering Corp., Pompton Plains, N. J.
Ejay Baseboard Mfg. Co., Winsted, Conn.
Embassy Steel Products, Inc., Brooklyn.
Farrell Associates, Charles, Valencia, Pa.
Fedders-Quigan Corp., Heating Div., Trenton, N. J.
Federal Boiler Co., Inc., Midland Park, N. J.
General Automatic Products Corp., Baltimore, Md.
General Heating Products Co., Philadelphia, Pa.
Governale Bros., Inc., Brooklyn, N. Y.
Hoff Mfg. Co., Bethany, New Haven, Conn.
Hydrotherm, Inc., Northvale, N. J.
I. W. Air Conditioning Corp., New York, N. Y.
Kramer Trenton Co., Trenton, N. J.
Kritzer Radiant Coils, Inc., Batavia, Ill.
National-U. S. Radiator Corp., Johnstown, Pa.
Nesbitt, Inc., John J., Philadelphia, Pa.
Patco Mfg. Co., Philadelphia, Pa.
Peerless of America, Inc., Chicago, Ill.
Penn Boiler & Burner Mfg. Corp., Lancaster, Pa.
Rempe Co., Chicago, Ill.
Republic Products Co., Philadelphia, Pa.
Rittling Corp., Buffalo, N. Y.
Sarco Co., Inc., New York, N. Y.
Sarcotherm Controls, Inc., New York, N. Y.
Schemenauer Mfg. Corp., Holland, O.
Shaw-Perkins Mfg. Co., Pittsburgh, Pa.
Slant-Fin Radiator Corp., Richmond Hill, N. Y.
Spartan Convector Co., Inc., Maspeth, N. Y.
Stedco Products, Wilkes-Barre, Pa.
Sterling Radiator Co., Inc., Westfield, Mass.
Tenney Engineering, Inc., Union, N. J.
Trane Co., The, La Crosse, Wis.
Tuttle & Bailey, Div. of Allied Thermal Corp., New Britain, Conn.
Vulcan Radiator Co., Hartford, Conn.
Webster & Co., Warren, Camden, N. J.
Wescott Snyder Mfg. Corp., Madison, N. J.
Young Radiator Co., Racine, Wis.

RADIATION, CONVECTION TYPE, ELECTRIC HEATING ELEMENT

Acme Electric Heating Co., Boston, Mass.
Argo Industries, Inc., Hartford, Conn.
Berko Electric Mfg. Co., Queens Village, N. Y.
Ceilheat, Inc., Knoxville, Tenn.
Circle-Air Industries, Inc., Brooklyn, N. Y.
Electriliving Corp., Indianapolis, Ind.
Electromode Div. of Commercial Controls Corp., Rochester, N. Y.
Electro-Products Mfg. Co., Vancouver, Wash.
General Electric Co., Construction Materials Div., Bridgeport, Conn.
Hunter Div., Robbins & Myers, Inc., Memphis, Tenn.
Hynes Electric Heating Div., Turbine Equipment Co., Westfield, N. J.
Meier Elec. & Mach. Co., Inc., Indianapolis, Ind.
Modernheat Cable Corp., Kingsport, Tenn.
Spartan Convector Co., Inc., Maspeth, N. Y.
Sundial Electric Co., Richmond Hill, N. Y.
Sunwarm, Inc., Kingsport, Tenn.
Thermador Electrical Mfg., Los Angeles, Calif.
Vulcan Electric Co., Danvers, Mass.
Vulcan Radiator Co., Hartford, Conn.
Wesix Electric Heater Co., San Francisco.
Wiegand Co., Edwin L., Pittsburgh, Pa.

RADIATION, CONVECTION TYPE, FERROUS

American Radiator & Standard Sanitary Corp., Plumbing & Heating Div., New York, N. Y.
Auburn Burner Co., Auburn, Ind.
Brown Products Corp., Union, N. J.
Dunkirk Radiator Corp., Dunkirk, N. Y.
Edwards Engineering Corp., Pompton Plains, N. J.
Embassy Steel Products, Inc., Brooklyn, N. Y.
Fedders-Quigan Corp., Heating Div., Trenton, N. J.
Governale Bros., Inc., Brooklyn, N. Y.
Herman Nelson Products, American Air Filter Co., Inc., Louisville, Ky.
I. W. Air Conditioning Corp., New York, N. Y.
Kritzer Radiant Coils, Inc., Batavia, Ill.
Murray Mfg. Co., D. J., Wausau, Wis.
National-U. S. Radiator Corp., Johnstown, Pa.
Rempe Co., Chicago, Ill.
Rittling Corp., The, Buffalo, N. Y.
Shaw-Perkins Mfg. Co., Pittsburgh, Pa.
Tranter Mfg., Inc., Lansing, Mich.
Webster & Co., Warren, Camden, N. J.

RADIATION, CONVECTION TYPE, NON-FERROUS

Airtherm Mfg. Co., St. Louis, Mo.
American Radiator & Standard Sanitary Corp., Plumbing & Heating Div., New York, N. Y.
Argo Industries, Inc., Hartford, Conn.
Beacon-Morris Corp., Boston, Mass.
Brown Products Corp., Union, N. J.
Convector Corp., Washington, D. C.
Dunham-Bush, Inc., West Hartford, Conn.
Dunkirk Radiator Corp., Dunkirk, N. Y.
Eastern Boiler Co., Hartford, Conn.
Edwards Engineering Corp., Pompton Plains, N. J.
Embassy Steel Products, Inc., Brooklyn.
Fedders-Quigan Corp., Heating Div., Trenton, N. J.
G & O Mfg. Co., New Haven, Conn.
General Heating Products Co., Philadelphia, Pa.
Governale Bros., Inc., Brooklyn, N. Y.
Heat-Exchangers, Inc., Chicago, Ill.
Herman Nelson Products, American Air Filter Co., Inc., Louisville, Ky.
Hoff Mfg. Co., Bethany, New Haven, Conn.
I. W. Air Conditioning Corp., New York, N. Y.
Illinois Engineering Products, American Air Filter Co., Inc., Louisville, Ky.
Kehm Corp., The, Chicago, Ill.
Kramer Trenton Co., Trenton, N. J.
Kritzer Radiant Coils, Inc., Batavia, Ill.
Modine Mfg. Co., Racine, Wis.
National-U. S. Radiator Corp., Johnstown, Pa.
Nesbitt Inc., John J., Philadelphia, Pa.
Pacific Steel Boiler Div., National-U. S. Radiator Corp., Johnstown, Pa.
Patco Mfg. Co., Philadelphia, Pa.
Penn Boiler & Burner Mfg. Corp., Lancaster, Pa.
Republic Products Co., Philadelphia, Pa.
Rittling Corp., The, Buffalo, N. Y.
Rome-Turney Radiator Co., Rome, N. Y.
Schemenauer Mfg. Corp., Holland, O.
Shaw-Perkins Mfg. Co., Pittsburgh, Pa.
Spartan Convector Co., Inc., Maspeth, N. Y.
Tenney Engineering Inc., Union, N. J.
Trane Co., The, La Crosse, Wis.
Vapor Heating Corp., Chicago, Ill.
Webster & Co., Warren, Camden, N. J.
Young Radiator Co., Racine, Wis.

RADIATION, DIRECT

American Radiator & Standard Sanitary Corp., Plumbing & Heating Div., New York, N. Y.
Burnham Corp., Irvington, N. Y.
Clow & Sons, Inc., James B., Chicago, Ill. (Gas fired)
Crane Co., Chicago, Ill.
Dean Thermo-Panel Coil Div., Dean Products, Inc., Brooklyn, N. Y.
Dunkirk Radiator Corp., Dunkirk, N. Y.
Murray Mfg. Co., D. J., Wausau, Wis.
National-U. S. Radiator Corp., Johnstown, Pa.
Rittling Corp, The, Buffalo, N. Y.
Utica Radiator Corp., Utica, N. Y.
Weil-McLain Co., Michigan City, Ind.
Wilson Engineering Corp., Chicago, Ill.

RADIATION, FIN TUBE TYPE

Alstrom Corp., New York, N. Y.
American Radiator & Standard Sanitary Corp., Plumbing & Heating Div., New York, N. Y.
Argo Industries, Inc., Hartford, Conn.
Baseline Mfg. Corp. of Fla., St. Petersburg, Fla.
Brown Products Corp., Union, N. J.
Convector Corp., Washington, D. C.
Crane Co., Chicago, Ill.
Drayer-Hanson, Div. of National U. S. Radiator Corp., Los Angeles, Calif.
Dunham-Bush, Inc., West Hartford, Conn.
Eastern Boiler Co., Hartford, Conn.
Edwards Engineering Corp., Pompton Plains, N. J.
Electro-Products Mfg. Co., Vancouver, Wash.
Embassy Steel Products, Inc., Brooklyn.
Fedders-Quigan Corp., Heating Div., Trenton, N. J.
G & O Mfg. Co., New Haven, Conn.
General Automatic Products Corp., Baltimore, Md.
General Heating Products Co., Philadelphia, Pa.
Heat Transfer Products, Inc., Perkasie, Pa.
Herman Nelson Products, American Air Filter Co., Inc., Louisville, Ky.
Hoff Mfg. Co., Bethany, New Haven, Conn.
Hydrotherm, Inc., Northvale, N. J.
Illinois Engineering Products, American Air Filter Co., Inc., Louisville, Ky.
Kramer Trenton Co., Trenton, N. J.

Kritzer Radiant Coils, Inc., Batavia, Ill.
Lee Vine Fin-Tube Radiator Co., Inc., New Haven, Conn.
Moore Dry Kiln Co., Jacksonville, Fla.
National-U. S. Radiator Corp., Johnstown, Pa.
Nesbitt, Inc., John J., Philadelphia, Pa.
Pacific Steel Boiler Div., National-U. S. Radiator Corp., Johnstown, Pa.
Peerless of America, Inc., Chicago, Ill.
Radiant-Ray Radiation, Inc., Newington, Conn.
Rempe Co., Chicago, Ill.
Rittling Corp., The, Buffalo, N. Y.
Rome-Turney Radiator Co., Rome, N. Y.
Sarco Co., Inc., New York, N. Y.
Sarcotherm Controls, Inc.. New York, N. Y.
Schemenauer Mfg. Corp., Holland, O.
Schutte and Koerting Co., Cornwells Heights, Bucks County, Pa.
Shaw-Perkins Mfg. Co., Pittsburgh, Pa.
Slant-Fin Radiator Corp., Richmond Hill, N. Y.
Stedco Products, Wilkes-Barre, Pa.
Sterling Radiator Co., Inc., Westfield, Mass.
Super Radiator Corp., Minneapolis, Minn.
Trane Co., The, La Crosse, Wis.
Vapor Heating Corp., Chicago, Ill.
Vulcan Radiator Co., Hartford, Conn.
Webster & Co., Warren, Camden, N. J.
York-Shipley, Inc., York, Pa.

RADIATOR AND CONVECTOR HUMIDIFIERS

See Humidifiers for Radiators and Convectors

RADIATOR HANGERS

See Hangers or Brackets, Radiator

RADIATOR ORIFICES

See Orifices, Radiator

RADIATOR ORIFICE VALVES

See Valves, Radiator, Orifice

RADIATOR VALVES

See Valves, Radiator

RADIATOR VENT VALVE HUMIDIFIERS

See Humidifiers, Radiator Vent Valve

RADIATORS, ELECTRIC

Acme Electric Heating Co., Boston, Mass.
Burnham Corp., Irvington, N. Y. (portable steam)
I. W. Air Conditioning Corp., New York, N. Y.
Slant-Fin Radiator Corp., Richmond Hill, N. Y.
Spartan Convector Co., Inc., Maspeth, N. Y.
ThermoRay Corp., Newark, N. J.
Trent, Inc., Philadelphia, Pa.
Vulcan Radiator Co., Hartford, Conn.

RADIATORS, GAS FIRED

Fedders-Quigan Corp., Heating Div., Trenton, N. J.
Prat-Daniel Corp., Thermobloc Div., South Norwalk, Conn.

RADIATORS, HUMIDIFYING

Murray Mfg. Co., D. J., Wausau, Wis.

RADIOACTIVE ISOTOPES FOR DETECTING LEAKS IN PIPING AND HEATING SYSTEMS

See Isotopes, Radioactive

RADIOGRAPHIC INSPECTION

See Equipment, Radiographic Inspection

RADIOMETERS, THERMAL, FOR RADIANT HEAT MEASUREMENTS

Beckman & Whitley, Inc., San Carlos, Calif.

RATCHET WRENCHES

See Wrenches, Ratchet

REAMERS, PIPE

American Pipe Tool Co., Chicago, Ill.
Armstrong-Bridgeport Tool Mfg. Corp., Belleville, N. J.
Armstrong Bros. Tool Co., Chicago, Ill.
Beaver Pipe Tools, Inc., Warren, O.
Chicago Specialty Mfg. Co., Chicago, Ill.
Greenfield Tap & Die Div. of United Greenfield Corp., Greenfield, Mass.
Holub Industries, Inc., Sycamore, Ill.
Mueller Co., Decatur, Ill.
Nye Tool Co., Chicago, Ill.
Reed Mfg Co., Erie, Pa.
Ridge Tool Co., Elyria, O.
Sac Tool Mfg. Co., St. Louis, Mo.
Thor Power Tool Co., Aurora, Ill.
Toledo Pipe Threading Machine Co., Toledo, O.

RECEIVERS, REFRIGERANT, LIQUID

Acme Industries, Inc., Jackson, Mich.
Ansul Chemical Co., Refrigeration Div., Marinette, Wis.
Dunham-Bush, Inc., West Hartford, Conn.
Frick Co., Waynesboro, Pa.
Howe Ice Machine Co., Chicago, Ill.
Killebrew Engineering Corp., St. Louis, Mo.
Refrigeration Research, Inc., Brighton, Mich.
Remco, Inc., Zelienople, Pa.
Tube Manifold Corp., North Tonawanda, N. Y.
Weatherhead Co., The, Ft. Wayne Div., Ft. Wayne, Ind.
Worthington Corp., East Orange, N. J.
Yuba Mfg. Div., Yuba Consolidated Industries, Inc., Benicia, Calif.

RECIPROCATING PUMPS

See Pumps, Reciprocating

RECORDER-CONTROLLERS, COMBINED TEMPERATURE AND HUMIDITY

American Instrument Co., Inc., Silver Spring, Md.
Bristol Co., The, Waterbury, Conn.
Foxboro Co., Foxboro, Mass.
Minneapolis-Honeywell Regulator Co., Industrial Div., Philadelphia, Pa.
Moeller Instrument Co., Richmond Hill, N. Y.
Partlow Corp., The, New Hartford, N. Y.
Powers Regulator Co., Skokie, Ill.
Scientific Instrument Co., Detroit, Mich.
Serdex, Inc., Boston, Mass.
Taylor Instrument Companies, Rochester, N. Y.
Thwing-Albert Instrument Co.,. Philadelphia, Pa.
Trerice Co., H. O., Detroit, Mich.
Weksler Instruments Corp., Freeport, L. I., N. Y.
Weston Instruments, Div. of Daystrom, Inc., Newark, N. J.

RECORDER-CONTROLLERS, HUMIDITY

American Instrument Co., Inc., Silver Spring, Md.
Bristol Co., The, Waterbury, Conn.
Foxboro Co., Foxboro, Mass.
Garden City Instruments, Inc., Chicago, Ill.
Instrument Div., Robertshaw-Fulton Controls Co., Philadelphia, Pa.
Johnson Service Co., Milwaukee, Wis.
Leeds & Northrup Co., Philadelphia, Pa.
Minneapolis-Honeywell Regulator Co., Industrial Div., Philadelphia, Pa.
Moore Products Co., Philadelphia, Pa.
Powers Regulator Co., Skokie, Ill.
Scientific Instrument Co., Detroit, Mich.
Serdex, Inc., Boston, Mass.
Taylor Instrument Companies, Rochester, N. Y.
Trerice Co., H. O., Detroit, Mich.
Universal Dynamics Corp., Arlington, Va.
Weksler Instruments Corp., Freeport, L. I., N. Y.
Weston Instruments, Div. of Daystrom, Inc., Newark, N. J.

RECORDER-CONTROLLERS, PRESSURE

American Meter Co., Inc., Philadelphia, Pa.
Automatic Control Co. St. Paul, Minn.
Automatic Timing & Controls, Inc., King of Prussia, Pa.
Bailey Meter Co., Cleveland, O.
Barton Instrument Corp., Monterey Park, Calif.
Bristol Co., The, Waterbury, Conn.
Daytronic Corp., Dayton, O.
Defender Instrument and Regulator Co., Boody, Ill.
Dickson Co., The, Chicago, Ill.
Electronics Corp. of America, Cambridge, Mass.
Fischer & Porter Co., Hatboro, Pa.
Foxboro Co., Foxboro, Mass.
Garden City Instruments, Inc., Chicago, Ill.
General Controls Co., Glendale, Calif.
Hagan Chemicals & Controls, Inc., Pittsburgh, Pa.
Hays Corp., Michigan City, Ind.
Heat-Timer Corp., New York, N. Y.
Instrument Div., Robertshaw-Fulton Controls Co., Philadelphia, Pa.
Mason-Neilan, Div. of Worthington Corp., Norwood, Mass.
Minneapolis-Honeywell Regulator Co., Industrial Div., Philadelphia, Pa.
Moore Products Co., Philadelphia, Pa.
Penn Instruments Div. of Burgess-Manning Co., Philadelphia, Pa.
Power Regulator Co., Skokie, Ill.
Scientific Instrument Co., Detroit, Mich.
Swartwout Co., The, Cleveland, O.
Taylor Instrument Companies, Rochester, N. Y.
Trerice Co., H. O., Detroit, Mich.
United States Gauge Div. of American Machine and Metals Inc., Sellersville, Pa.
Weksler Instruments Corp., Freeport, L. I., N. Y.
Weston Instruments, Div. of Daystrom, Inc., Newark, N. J.

RECORDER-CONTROLLERS, TEMPERATURE

American Instrument Co., Inc., Silver Spring, Md.
American Meter Co., Inc., Philadelphia, Pa.
Bailey Meter Co., Cleveland, O.
Barber-Colman Co., Rockford, Ill.
Bristol Co., The, Waterbury, Conn.
Defender Instrument and Regulator Co., Boody, Ill.
Dickson Co., The, Chicago, Ill.
Electronics Corp. of America, Cambridge, Mass.
Fischer & Porter Co., Hatboro, Pa.
Foxboro Co., Foxboro, Mass.
Garden City Instruments, Inc., Chicago, Ill.
General Controls Co., Glendale, Calif.
Hagan Chemicals & Controls, Inc., Pittsburgh, Pa.
Hays Corp., Michigan City, Ind.
Heat-Timer Corp., New York, N. Y.
Instrument Div., Robertshaw-Fulton Controls Co., Philadelphia, Pa.
Johnson Service Co., Milwaukee, Wis.
Leeds & Northrup Co., Philadelphia, Pa.
Mason-Neilan, Div. of Worthington Corp., Norwood, Mass.
Minneapolis-Honeywell Regulator Co., Industrial Div., Philadelphia, Pa.
Moore Products Co., Philadelphia, Pa.
Partlow Corp., The, New Hartford, N. Y.
Penn Instruments Div. of Burgess-Manning Co., Philadelphia, Pa.
Powers Regulator Co., Skokie, Ill.
Scientific Instrument Co., Detroit, Mich.
Swartwout Co., The, Cleveland, O.
Taylor Instrument Companies, Rochester, N. Y.
Thermo Electric Co., Inc., Saddle Brook, N. J.
Thwing-Albert Instrument Co., Philadelphia.
Trerice Co., H. O., Detroit, Mich.
United States Gauge Div. of American Machine and Metals Inc., Sellersville, Pa.
Weksler Instruments Corp., Freeport, L. I., N. Y.
West Instrument Corp., Chicago, Ill.
Weston Instruments, Div. of Daystrom, Inc., Newark, N. J.

RECORDER-TOTALIZERS, TIME, FOR HEATING SYSTEMS

Au-Temp Co. Corp., New York, N. Y.
Cramer Controls Corp., Centerbrook, Conn.
Haydon Co., A. W., The, Waterbury, Conn.
Heat-Timer Corp., New York, N. Y.
Standard Instrument Div., Heat Timer Corp., New York, N. Y.

RECORDERS, CARBON DIOXIDE

Davis Instruments, Div. of Davis Emergency Equipment Co., Inc., Newark, N. J.
Defender Instrument and Regulator Co., Boody, Ill.
Fischer & Porter Co., Hatboro, Pa.
Hays Corp., Michigan City, Ind.
Leeds & Northrup Co., Philadelphia, Pa.
Permutit Co., Div. of Pfaudler Permutit, Inc., New York, N. Y.
Republic Flow Meters Co., Chicago, Ill.
Uehling Instrument Co., Paterson, N. J.
Victory Engineering Corp., Union, N. J.

RECORDERS, COMBINED TEMPERATURE AND HUMIDITY

Abbeon Supply Co., Jamaica, N. Y.
American Instrument Co., Inc., Silver Spring, Md.
Bristol Co., The, Waterbury, Conn.
Foxboro Co., Foxboro, Mass.
Friez Instrument Div., Bendix Aviation Corp., Baltimore, Md.
Garden City Instruments Inc., Chicago, Ill.
Green Instruments, Inc., Henry J., Westbury, N. Y.
Instrument Div., Robertshaw-Fulton Controls Co., Philadelphia, Pa.
Leeds & Northrup Co., Philadelphia, Pa.
Minneapolis-Honeywell Regulator Co., Industrial Div., Philadelphia, Pa.
Palmer Thermometers, Inc., Cincinnati, O.
Partlow Corp., The, New Hartford, N. Y.
Scientific Instrument Co., Detroit, Mich.
Taylor Instrument Companies, Rochester, N. Y.
Thwing-Albert Instrument Co., Philadelphia.
Trerice Co., H. O., Detroit, Mich.
Universal Instruments Co., Brentwood, Md.
Weksler Instruments Corp., Freeport, L. I., N. Y.
Weston Instruments, Div of Daystrom, Inc., Newark, N. J.

RECORDERS, DEW POINT

American Instrument Co., Inc., Silver Spring, Md.
Bristol Co., The, Waterbury, Conn.
Cargocaire Engineering Corp., New York, N. Y.
Foxboro Co., Foxboro, Mass.
Mine Safety Appliances Co., Pittsburgh, Pa.
Minneapolis-Honeywell Regulator Co., Industrial Div., Philadelphia, Pa.
Powers Regulator Co., Skokie, Ill.
Surface Combustion Corp., Toledo, O.

RECORDERS, DRAFT

Bailey Meter Co., Cleveland, O.
Bristol Co., The, Waterbury, Conn.
Defender Instrument and Regulator Co., Boody, Ill.
Foxboro Co., Foxboro, Mass.
Hagan Chemicals & Controls, Inc., Pittsburgh, Pa.
Hays Corp., Michigan City, Ind.
Moore Products Co., Philadelphia, Pa.
Republic Flow Meters Co., Chicago, Ill.
Uehling Instrument Co., Paterson, N. J.
Victory Engineering Corp., Union, N. J.

RECORDERS, HUMIDITY

American Instrument Co., Inc., Silver Spring, Md.
Bristol Co., The, Waterbury, Conn.
Foxboro Co., Foxboro, Mass.
Friez Instrument Div., Bendix Aviation Corp., Baltimore, Md.
Garden City Instruments, Inc., Chicago, Ill.
Green Instruments, Inc., Henry J., Westbury, N. Y.
Instrument Div., Robertshaw-Fulton Controls Co., Philadelphia, Pa.
Leeds & Northrup Co., Philadelphia, Pa.
Mine Safety Appliances Co., Pittsburgh, Pa.
Minneapolis-Honeywell Regulator Co., Industrial Div., Philadelphia, Pa.
Moeller Instrument Co., Richmond Hill, N. Y.
Palmer Thermometers, Inc., Cincinnati (Norwood), O.
Scientific Instrument Co., Detroit, Mich.
Taylor Instrument Companies, Rochester, N. Y.
Trerice Co., H. O., Detroit, Mich.
Universal Dynamics Corp., Arlington, Va.
Universal Instruments Co., Brentwood, Md.
Weighing & Control Components, Inc., Hatboro, Pa.
Weksler Instruments Corp., Freeport, L. I., N. Y.
Weston Instruments, Div. of Daystrom, Inc., Newark, N. J.

RECORDERS, LIQUID LEVEL

Automatic Control Co., St. Paul, Minn.
Bailey Meter Co., Cleveland, O.
Barton Instrument Corp., Monterey Park, Calif.
Bristol Co., The, Waterbury, Conn.
Builders-Providence Div., B-I-F Industries, Inc., Providence, R. I.
Defender Instrument & Regulator Co., Boody, Ill.
Fischer & Porter Co., Hatboro, Pa.
Foxboro Co., Foxboro, Mass.
Hagan Chemicals & Controls, Inc., Pittsburgh, Pa.
Hays Corp., Michigan City, Ind.
Instrument Div., Robertshaw-Fulton Controls Co., Philadelphia, Pa.
Leeds & Northrup Co., Philadelphia, Pa.
Liquidometer Corp., Long Island City, N. Y.
Mason-Neilan, Div. of Worthington Corp., Norwood, Mass.
Minneapolis-Honeywell Regulator Co., Industrial Div., Philadelphia, Pa.
Moore Products Co., Philadelphia, Pa.
Penn Instruments Div. of Burgess-Manning Co., Philadelphia, Pa.
Republic Flow Meters Co., Chicago, Ill.
Simplex Valve & Meter Co., Lancaster, Pa.
Taylor Instrument Companies, Rochester, N. Y.
Texas Instruments, Inc., Houston, Tex.
Trerice Co., H. O., Detroit, Mich.
Uehling Instrument Co., Paterson, N. J.
Westinghouse Electric Corp., Pittsburgh, Pa.
Yarnall-Waring Co., Philadelphia, Pa.

RECORDERS, OXYGEN

Bailey Meter Co., Cleveland, O.
Barton Instrument Corp., Monterey Park, Calif.
Hagan Chemicals & Controls, Inc., Pittsburgh, Pa.
Hays Corp., Michigan City, Ind.
Leeds & Northrup Co., Philadelphia, Pa.
Mine Safety Appliances Co., Pittsburgh, Pa.
Victory Engineering Corp., Union, N. J.

RECORDERS, PRESSURE AND VACUUM

American Meter Co., Inc., Philadelphia, Pa.
Automatic Timing & Controls, Inc., King of Prussia, Pa.
Bailey Meter Co., Cleveland, O.
Bristol Co., The, Waterbury, Conn.
Crosby Valve & Gage Co., Wrentham, Mass.
Daytronic Corp., Dayton, O.
Defender Instrument & Regulator Co., Boody, Ill.
Dickson Co., The, Chicago, Ill.
Electric Auto-Lite Co., Instrument & Gauge Div., Toledo, O.
Fischer & Porter Co., Hatboro, Pa.
Flow Corp., Arlington, Mass.
Foxboro Co., Foxboro, Mass.
Garden City Instruments, Inc., Chicago, Ill.
Hagan Chemicals & Controls, Inc., Pittsburgh, Pa.
Hastings-Raydist, Inc., Hampton, Va.
Hays Corp., Michigan City, Ind.
Heat-Timer Corp., New York, N. Y.
Leeds & Northrup Co., Philadelphia, Pa.
Manning, Maxwell & Moore, Inc., Stratford, Conn.
Mason-Neilan, Div. of Worthington Corp., Norwood, Mass.
Minneapolis-Honeywell Regulator Co., Industrial Div., Philadelphia, Pa.
Moeller Instrument Co., Richmond Hill, N. Y.
Penn Instruments Div. of Burgess-Manning Co., Philadelphia, Pa.
Republic Flow Meters Co., Chicago, Ill.
Scientific Instrument Co., Detroit, Mich.
Swartwout Co., The, Cleveland, Ohio
Taylor Instrument Companies, Rochester, N. Y.
Trerice Co., H. O., Detroit, Mich.
Uehling Instrument Co., Paterson, N. J.
United States Gauge Div. of American Machine and Metals Inc., Sellersville, Pa.
Weksler Instruments Corp., Freeport, L. I., N. Y.
Weston Instruments, Div. of Daystrom, Inc., Newark, N. J.

RECORDERS, SMOKE DENSITY

Bailey Meter Co., Cleveland, O.
Bristol Co., The, Waterbury, Conn.
Brooke Engineering Co., Inc., Philadelphia Pa.
De-Tec-Tronic Corp., Chicago, Ill.
Edwards, L. V., Rockville Center, N. Y.
Electronics Corp. of America, Cambridge, Mass.
Ess Instrument Co., Bergenfield, N. J.
General Electric Co., Apparatus Sales Div., Schenectady, N. Y.
Leeds & Northrup Co., Philadelphia, Pa.
Reliance Instrument Mfg. Corp., Glen Cove, Long Island, N. Y.
Standard Instrument Div., Heat-Timer Corp., New York, N. Y.
Sterns-Flinn Corp., New York, N. Y.

RECORDERS, TEMPERATURE

American Instrument Co., Inc., Silver Spring, Md.
American Meter Co., Inc., Philadelphia, Pa.
Bacharach Industrial Instrument Co., Pittsburgh, Pa.
Bailey Meter Co., Cleveland, O.
Barber-Colman Co., Rockford, Ill.
Beckman & Whitley, Inc., San Carlos, Calif.
Bristol Co., The, Waterbury, Conn.
Defender Instrument & Regulator Co., Boody, Ill.
Dickson Co., The, Chicago, Ill.
Electric Auto-Lite Co., Instrument & Gauge Div., Toledo, O.
Fischer & Porter Co., Hatboro, Pa.
Foxboro Co., Foxboro, Mass.
Friez Instrument Div., Bendix Aviation Corp., Baltimore, Md.
G. M. Mfg. Co., New York, N. Y.
Garden City Instruments, Inc., Chicago, Ill.
General Controls Co., Glendale, Calif.
General Electric Co., Apparatus Sales Div., Schenectady, N. Y.
Green Instruments, Inc., Henry J., Westbury, N. Y.
Hagan Chemicals & Controls, Inc., Pittsburgh, Pa.
Hays Corp., Michigan City, Ind.
Heat-Timer Corp., New York, N. Y.
Instrument Div., Robertshaw-Fulton Controls Co., Philadelphia, Pa.
Leeds & Northrup Co., Philadelphia, Pa.
Manning, Maxwell & Moore, Inc., Stratford, Conn.
Mason-Neilan, Div. of Worthington Corp., Norwood, Mass.
Minneapolis-Honeywell Regulator Co., Industrial Div., Philadelphia, Pa.
Moeller Instrument Co., Richmond Hill, N. Y.
Moore Products Co., Philadelphia, Pa.
Palmer Thermometers, Inc., Cincinnati (Norwood), O. (Mercury-actuated)
Partlow Corp., The, New Hartford, N. Y.
Penn Instruments Div. of Burgess-Manning Co., Philadelphia, Pa.
Powers Regulator Co., Skokie, Ill.
Republic Flow Meters Co., Chicago, Ill.
Scientific Instrument Co., Detroit, Mich.
Taylor Instrument Companies, Rochester, N. Y.
Thermo Electric Co., Inc., Saddle Brook, N. Y.
Thwing-Albert Instrument Co., Philadelphia, Pa.
Trerice Co., H. O., Detroit, Mich.
United States Gauge Div. of American Machine and Metals Inc., Sellersville, Pa.
Universal Instruments Co., Brentwood, Md.
Victory Engineering Corp., Union, N. J.
Weksler Instruments Corp., Freeport, L. I., N. Y.
West Instrument Corp., Chicago, Ill.
Weston Instruments, Div. of Daystrom, Inc., Newark, N. J.
Westronics, Inc., Fort Worth, Tex.

RECORDING THERMOMETERS

See Recorders, Temperature

RECOVERY EQUIPMENT, AIR

See Adsorbers, Odor, for Duct Systems

RECOVERY UNITS, HEAT, AIR TO AIR

See Units, Heat Recovery, Air to Air

REDUCERS AND INCREASERS, SPEED

- Abart Gear & Machine Co., Chicago, Ill.
- Adams Co., The, Dubuque, Iowa
- Allis-Chalmers Mfg. Co., Milwaukee, Wis.
- American Pulley Co., Philadelphia, Pa.
- Bodine Electric Co., Chicago, Ill.
- Boston Gear Wks., Quincy, Mass.
- Brown-Brockmeyer Co., Inc., Dayton, O.
- Chicago Die Casting Mfg. Co., Chicago, Ill.
- Cleveland Worm & Gear Co., Cleveland, O.
- Cone-Drive Gears Div., Michigan Tool Co., Detroit, Mich.
- De Laval Steam Turbine Co., Trenton, N. J.
- Dodge Mfg. Corp., Mishawaka, Ind.
- Falk Corp., Milwaukee, Wis.
- General Electric Co., Apparatus Sales Div., Schenectady, N. Y.
- Graham Transmissions, Inc., Menomonee Falls, Wis.
- Hewitt-Robins, Inc., Stamford, Conn.
- Janette Electric Mfg. Co., Morton Grove, Ill.
- Jones Machinery Div., Hewitt-Robins, Inc., Chicago, Ill.
- Lima Electric Motor Co., Inc., The, Lima, O.
- Link Belt Co., Chicago, Ill. (herringbone, worm gear)
- Master Electric Co., Div. of Reliance Electric & Engineering Co., Dayton, O.
- Morse Chain Co., Ithaca, N. Y.
- Philadelphia Gear Corp., Philadelphia, Pa.
- Poole Foundry & Machine Co., Baltimore, Md.
- Reliance Electric & Engineering Co., Cleveland, O.
- Sealmaster Bearings, Div. of Stephens-Adamson Mfg. Co., Aurora, Ill.
- Star-Kimble Electric Co., Div. of Safety Industries, Inc., Hamden, Conn.
- Steam Turbine Div., Worthington Corp., Wellsville, N. Y.
- Sterling Electric Motors, Inc., Los Angeles, Calif.
- Terry Steam Turbine Co., The, Hartford, Conn.
- U. S. Electrical Motors, Inc., Los Angeles, Calif.
- Westinghouse Electric Corp., Pittsburgh, Pa.
- Worthington Corp., East Orange, N. J.

REFRACTORIES AND REFRACTORY CEMENT

- Allen Co., Robert G., Mechanicsville, N. Y.
- Armstrong Cork Co., Lancaster, Pa.
- Babcock & Wilcox Co., Boiler Div., New York, N. Y.
- Basic Inc., Cleveland, O.
- Botfield Refractories Co., Philadelphia, Pa.
- Carey Mfg. Co., Philip, Lockland, Cincinnati, O.
- Dixon Crucible Co., Joseph, Jersey City, N. J.
- Elraco Engineering Co., Los Angeles, Calif.
- France Refractories, Co., J. H., Snow Shoe, Pa.
- Green Fire Brick Co., Mexico, Mo.
- Johns-Manville, New York, N. Y.
- Nebel Mfg. Co., Cleveland, O.
- Norton Co., Worcester, Mass.
- Plibrico Co., Chicago, Ill.
- Preferred Utilities Mfg. Corp., New York, N. Y.
- Pyrolite Products Co., Cleveland, O.
- Quigley Co., Inc, New York, N. Y.
- Ramtite Co., The, Chicago, Ill.
- Refractory & Insulation Corp., New York, N. Y.
- Reintjes Co., Geo. P., Kansas City, Mo.
- Rex Clay Products Co., Detroit, Mich.
- Rex Roto Corp., Walled Lake, Mich.
- Robinson Clay Product Co., The, Akron, O.
- Rutland Fire Clay Co., Rutland, Vt.
- Sauereisen Cements Co., Pittsburgh, Pa.
- Saverite Engineering Co., Hoboken, N. J.
- Standard Fuel Engineering Co., Detroit, Mich.
- Taylor Sons Co., Charles, Cincinnati, O.
- United States Stoneware Co., New York, N. Y.
- Zonolite Co., Chicago, Ill.

REFRIGERANT DEHYDRATORS

See Dehydrators, Refrigerant

REFRIGERANT FILTERS

See Filters, Refrigerant

REFRIGERANT GAGE SETS

See Gage Sets, Refrigeration

REFRIGERANT GAS PURGERS

See Purgers, Refrigerant Gas

REFRIGERANT SLUG ELIMINATORS

See Eliminators, Slug, Refrigerant

REFRIGERANTS

- American Potash & Chemical Corp., Aerosol & Refrigeration Div., Los Angeles, Calif. (Refrigerants 11, 12, 22, 113, 114, sulphur dioxide methyl chloride)
- Ansul Chemical Co., Refrigeration Div., Marinette, Wis. (methyl, chloride, sulphur dioxide)
- Armour and Co., Ammonia Div., Chicago, Ill. (Anhydrous ammonia)
- Carrier Corp., Syracuse, N. Y. (carrene)
- Dow Chemical Co., The, Midland, Mich.
- du Pont de Nemours & Co., Inc., E. I., Electrochemicals Dept., Wilmington, Del. (Methyl chloride and methylene chloride)
- du Pont de Nemours & Co., Inc., E. I., Freon Products Div., Wilmington, Del. (fluorinated hydrocarbon refrigerants)
- General Chemical Div., Allied Chemical Corp., New York, N. Y. (R-12 Dichlorodifluoromethane, R-114A Dichlorotetrafluoroethane, R-22 Monochlorodifluoromethane, R-11 Trichloromonofluoromethane, R-113 Trichlorotrifluoroethane)
- Liquid Carbonic Div. of General Dynamics Corp., Chicago, Ill. (carbon dioxide)
- Monsanto Chemical Co., St. Louis, Mo. (anhydrous ammonia)
- Pennsalt Chemicals Corp., Philadelphia, Pa. (ammonia, fluorinated hydrocarbons) (packaged refrigerants)
- Pennsylvania Engrg. Co., Philadelphia, Pa.
- Pure Carbonic Co., Div. of Air Reduction Co., Inc., New York, N. Y. (carbon dioxide)
- Sun Oil Co., Philadelphia, Pa. (Anhydrous ammonia)
- Union Carbide Chemicals Co., Div. of Union Carbide Corp., New York, N. Y. (fluorocarbons; glycols)
- Virginia Smelting Co., West Norfolk, Va., (Methyl chloride, liquid sulphur dioxide.)

REFRIGERATING COMPRESSORS

See Compressors, Refrigerating

REFRIGERATION ACCUMULATORS

See Accumulators, Refrigeration

REFRIGERATION CONTROLS

See Valves, Refrigeration

REFRIGERATION FITTINGS

See Fittings, Refrigeration

REFRIGERATION MANIFOLDS

See Manifolds, Refrigeration

REFRIGERATION VALVES

See Valves, Refrigeration

REGISTERS

See also Diffusers; Grilles; Panels, Perforated, for Air Diffusion

- A. & A. Register Co., Cleveland, O.
- A-J Mfg. Co., Kansas City, Mo.
- Air Control Products, Inc., Coopersville, Mich.
- Air Devices, Inc., New York, N. Y.
- Air Distribution Products Co., Los Angeles.
- Air-Factors Inc., Monrovia, Calif.
- Auer Register Co., Cleveland, O.
- Austin Engineering & Mfg. Co., Inc., Ysleta, Tex.
- Barber-Colman Co., Rockford, Ill.
- Bowman Co., Inc., D. F., Clearwater, Fla.
- Carnes Corp., Verona, Wis.
- Char-Gale Mfg. Co., Minneapolis, Minn.
- Controlair Mfg. Co., Los Angeles, Calif.
- Corbman Bros., Inc., Philadelphia, Pa.
- Diamond Mfg. Co., Wyoming, Pa.
- Dole Valve Co., The, Morton Grove, Ill. (Automatic register)
- Empire Ventilation Equipment Co., Long Island City, N. Y.
- General Air Products Corp., Cedar Grove, N. J.
- Harrington & King Perforating Co., Inc., Chicago, Ill.
- Hart & Cooley Mfg. Co., Holland, Mich.
- Hastings Air Control, Inc., Omaha, Nebr.
- Hendrick Mfg. Co., Carbondale, Pa.
- Independent Register Co., Cleveland, O.
- Krueger Air Conditioning Co., Tucson, Ariz.
- Lenly Mfg. Co., Inc., Los Angeles, Calif.
- Lima Register Co., The, Lima, O.
- Midco Register Corp., St. Paul, Minn.
- Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.
- Register & Grille Mfg. Co., Inc., Brooklyn, N. Y.
- Rhoads Engineering Corp., Culver City, Calif.
- Rock Island Register Co., Rock Island, Ill.
- Smith Co., J. B., Philadelphia, Pa.
- Standard Stamping & Perforating Co., Chicago, Ill.
- Titus Mfg. Corp., Waterloo, Ia.
- Tuttle & Bailey, Div. of Allied Thermal Corp., New Britain, Conn.
- United States Register Co., Battle Creek, Mich.
- Universal Diffuser Corp., Tuckahoe, N. Y.
- Viking Mfg. Corp., Cleveland, O.
- Waterloo Register Co., Inc., Waterloo, Ia.
- Young Regulator Co., Cleveland, O.

REGISTER UNITS, FOR SECONDARY AIR SUPPLY FOR OIL BURNERS

- Engineer Co., New York, N. Y.
- Faber Engineering Co., Inc., Norristown, Pa.
- National Airoil Burner Co., Inc., Philadelphia, Pa.

REGULATORS, AIR VELOCITY

- Ace Instrument Co., Inc., Brooklyn, N. Y.
- Barber-Colman Co., Rockford, Ill.
- Hastings-Raydist, Inc., Hampton, Va.
- Hays Corp., Michigan City, Ind.
- Johnson Service Co., Milwaukee, Wis.
- Taylor Instrument Companies, Rochester, N. Y.
- Thermal Agency, Houston, Tex.
- Trane Co., The, La Crosse, Wis.

REGULATORS, DAMPER SETS

- Ace Instrument Co., Inc., Brooklyn, N. Y.
- Acme Mfg. Co., Philadelphia, Pa.
- Acro Div., Robertshaw-Fulton Controls Co., Columbus, O.
- Adams Co., The, Dubuque, Ia.
- Air Conditioning Products Co., Detroit, Mich.
- Ashcraft Co., J. P., Dallas, Tex.
- Atlas Valve Co., Newark, N. J.
- Automatic Devices Co., Inc., Western Springs, Ill.
- Barber-Colman Co., Rockford, Ill.
- Crown Controls Co., Inc., New Bremen, O.
- Defender Instrument & Regulator Co., Boody, Ill.
- Detroit Controls Div. of American-Standard, Detroit, Mich.
- Duro-Dyne Corp., Farmingdale, L. I., N. Y.
- Elgen Mfg. Co., Long Island City, N. Y.
- Ellison Draft Gage Co., Chicago, Ill.
- Field Control Div., H. D. Conkey & Co., Mendota, Ill.
- Foster Wheeler Corp., New York, N. Y.
- General Controls Co., Glendale, Calif. and Skokie, Ill. (electric)
- Gerett Corp., M. A., Milwaukee, Wis.
- Hagan Chemicals & Controls, Inc., Pittsburgh, Pa.
- Hart & Cooley Mfg. Co., Holland, Mich.
- Mercoid Corp., The, Chicago, Ill.
- Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.
- Minneapolis-Honeywell Regulator Co., Industrial Div., Philadelphia, Pa.
- Mirror Patented Stove Pipe Co., Hartford, Conn.
- Penn Controls, Inc., Goshen, Ind.
- Powers Regulator Co., Skokie, Ill.
- Sarcotherm Controls, Inc., New York, N. Y.
- Thermal Agency, Houston, Tex.
- United States Register Co., Battle Creek, Mich.
- Wa-Trol, Houston, Tex.
- Young Regulator Co., Cleveland, O.

REGULATORS, DRAFT, COMBUSTION

A-P Controls Div., Controls Co. of America, Milwaukee, Wis.
Ace Instrument Co., Inc., Brooklyn, N. Y.
Askania Regulator Co., Chicago, Ill.
Automatic Devices Co., Inc., Western Springs, Ill.
Bressler Engineering Service, Oregon, Ill.
Bristol Co., The, Waterbury, Conn.
Brooke Engineering Co., Inc., Philadelphia, Pa.
Canton Stoker Corp., Canton, O.
Cash Co., A. W., Decatur, Ill.
Cleveland Controls, Inc., Cleveland, O.
Cole-Sewell Engineering Co., St. Paul, Minn.
Combustion Equipment Co., Moline, Ill.
Defender Instrument and Regulator Co., Boody, Ill.
Ellis Draft Gage Co., Chicago, Ill.
Ess Instrument Co., Bergenfield, N. J.
Field Control Div., H. D. Conkey & Co., Mendota, Ill.
Foxboro Co., Foxboro, Mass.
Fuel Reduction Corp., Chicago, Ill.
Fuelguard Co., Dallas, Tex.
General Controls Co., Glendale, Calif.
Hays Corp., The, Michigan City, Ind.
Kol-Master Corp., Oregon, Ill.
Leahy Mfg. Co., Los Angeles, Calif.
Locke Regulator Co., Salem, Mass.
Mason-Neilan, Div. of Worthington Corp., Norwood, Mass.
Mercoid Corp., The, Chicago, Ill.
Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.
Minneapolis-Honeywell Regulator Co., Industrial Div., Philadelphia, Pa.
Mirror Patented Stove Pipe Co., Hartford Conn.
Nichols Instrument Co., Baltimore, Md.
Preferred Utilities Mfg. Corp., New York, N. Y.
Reliance Instrument Mfg. Corp., Glen Cove, Long Island, N. Y.
Republic Flow Meters Co., Chicago, Ill. (Industrial)
Ruggles-Klingemann Mfg. Co., Boston, Mass.
Sarcotherm Controls, Inc., New York, N. Y.
Schade Valve Mfg. Co., Philadelphia, Pa.
Shallcross Controls, Inc., Markesan, Wis.
Simplex Mfg. Co., Fond du Lac, Wis.
Spence Engineering Co., Inc., Walden, N. Y.
Standard Instrument Div., Heat-Timer Corp., New York, N. Y.
Steinen Mfg. Co., Wm., Newark, N. J.
Walker Mfg. & Sales Co., St. Joseph, Mo.
Webster Engineering Co., Tulsa, Okla.
Windmaster Div., Lima Register Co., Lima, O.
Worner Electronic Devices, Rankin, Ill.

REGULATORS, FLUID FLOW, FOR CONSTANT VOLUME

Independent of Pressure

A-P Controls Div., Controls Co. of America, Milwaukee, Wis.
Askania Regulator Co., Chicago, Ill.
Bailey Co., Chas. M., San Francisco, Calif.
Binks Mfg. Co., Chicago, Ill.
Black, Sivalls & Bryson, Inc., Kansas City, Mo.
Bristol Co., The, Waterbury, Conn.
Brooks Rotameter Co., Lansdale, Pa.
Cla-Val Co., Newport Beach, Calif.
Dole Valve Co., The, Morton Grove, Ill.
Fischer & Porter Co., Hatboro, Pa.
Foxboro Co., Foxboro, Mass.
Hays Corp., Michigan City, Ind.
Henszey Co., Watertown, Wis.
Kates Co., W. A., The, Deerfield, Ill.
Klipfel Valves, Inc., Hamilton, O.
McDonnell & Miller, Inc., Chicago, Ill.
Taco Heaters, Inc., Cranston, R. I.

REGULATORS, LEVEL, LIQUID

Alco Valve Co., St. Louis, Mo.
Allen-Bradley Co., Milwaukee, Wis.
Askania Regulator Co., Chicago, Ill.
Associated Valve & Engineering Co., North Wales, Pa.
Automatic Control Co., St. Paul, Minn.
Bailey Co., Chas. M., San Francisco, Calif.
Bailey Meter Co., Cleveland, O.
Black, Sivalls & Bryson, Inc., Kansas City, Mo.
Boylston Steam Specialty Co., Chicago, Ill.
Bristol Co., The, Waterbury, Conn.
Burrows Mfg. Co., F. A., York, Pa.
Cla-Val Co., Newport Beach, Calif.
Copes-Vulcan Div., Blaw-Knox Co., Erie, Pa.
Cutler-Hammer, Inc., Milwaukee, Wis.
Davis Regulator Co., Chicago, Ill.
Defender Instrument & Regulator Co., Boody, Ill.
d'Este Div., Kaye & MacDonald, Inc., West Orange, N. J.
Dietz Co., Henry G., Long Island City, N. Y.
Eclipse Fuel Engineering Co., Rockford, Ill.
Fischer & Porter Co., Hatboro, Pa.
Fisher Governor Co., Marshalltown, Ia.
Foxboro Co., Foxboro, Mass.
Fulton Sylphon Div., Robertshaw-Fulton Controls Co., Knoxville, Tenn.
General Controls Co., Glendale, Calif.
Golden-Anderson Valve Specialty Co., Pittsburgh, Pa.
Hagan Chemicals & Controls, Inc., Pittsburgh, Pa.
Hays Corp., Michigan City, Ind.
Healy Ruff Co., St. Paul, Minn.
Henszey Co., Watertown, Wis.
Instrument Div., Robertshaw-Fulton Controls Co., Philadelphia, Pa.
Instruments, Inc., Tulsa, Okla.
Johnson Corp., The, Three Rivers, Mich.
Johnson Service Co., Milwaukee, Wis.
Keckley Co., O. C., Skokie, Ill.
Kieley & Mueller, Inc., Middletown, N. Y.
Kisco Boiler & Engineering Co., St. Louis, Mo.
Klipfel Valves, Inc., Hamilton, O.
Leslie Co., Lyndhurst, N. J.
Magnetrol, Inc., Chicago, Ill.
Mason-Neilan, Div. of Worthington Corp., Norwood, Mass.
McAlear Mfg. Co., Chicago, Ill.
McDonnell & Miller, Inc., Chicago, Ill.
Mercoid Corp., The, Chicago, Ill.
Minneapolis-Honeywell Regulator Co., Industrial Div., Philadelphia, Pa.
Moore Products Co., Philadelphia, Pa.
Newark Controls Co., Bloomfield, N. J.
Penn Controls, Inc., Goshen, Ind.
Petrometer Corp., Long Island City, N. Y.
Phillips & Co., H. A., Chicago, Ill.
Ruggles-Klingemann Mfg. Co., Boston, Mass.
Sarco Co., Inc., New York, N. Y.
Spence Engineering Co., Inc., Walden, N. Y.
Sporlan Valve Co., St. Louis, Mo.
Stickle Steam Specialties Co., Indianapolis, Ind.
Taylor Instrument Companies, Rochester, N. Y.
Trimount Instrument Co., Chicago, Ill.
United Electric Controls Co., Watertown, Mass.
Warren Engineering Co., Broadway, N. J.
Watts Regulator Co., Lawrence, Mass.

REGULATORS, PRESSURE, AIR

Ace Instrument Co., Inc., Brooklyn, N. Y.
Allen-Bradley Co., Milwaukee, Wis.
American Flow Control Corp., Houston, Tex.
American Meter Co., Inc., Philadelphia, Pa.
Askania Regulator Co., Chicago, Ill.
Atlas Valve Co., Newark, N. J.
Bailey Co., Chas. M., San Francisco, Calif.
Barber-Colman Co., Rockford, Ill.
Binks Mfg. Co., Chicago, Ill.
Black Mfg. Co., Baltimore, Md.
Black, Sivalls & Bryson, Inc., Kansas City, Mo.
Boylston Steam Specialty Co., Chicago, Ill.
Bristol Co., The, Waterbury, Conn.
Brooke Engineering Co., Inc., Philadelphia.
Burrows Mfg. Co., F. A., York, Pa.
CCA Products, Inc., Glendale, Calif.
Cash Co., A. W., Decatur, Ill.
Cash Valve Mfg. Corp., A. W., Decatur, Ill.
Chaplin-Fulton Mfg. Co., Pittsburgh, Pa.
Clark Mfg. Co., Cleveland, O.
Conoflow Corp., Subsidiary of Walworth Co., Philadelphia, Pa.
Crane Co., Chicago, Ill.
Cutler-Hammer, Inc., Milwaukee, Wis.
Davis Regulator Co., Chicago, Ill.
Defender Instrument and Regulator Co., Boody, Ill.
d'Este Div., Kaye & MacDonald, Inc., West Orange, N. J.
DeVilbiss Co., The, Toledo, O.
Dockson Corp., Detroit, Mich.
Eclipse Fuel Engineering Co., Rockford, Ill.
Fischer & Porter Co., Hatboro, Pa.
Fisher Governor Co., Marshalltown, Ia.
Foster Engineering Co., Union, N. J.
Foxboro Co., Foxboro, Mass.
Fulton Sylphon Div., Robertshaw-Fulton Controls Co., Knoxville, Tenn.
Gardner-Denver Co., Quincy, Ill.
Gas & Oil Industry Laboratories, Inc., Irvington, N. J.
General Controls Co., Glendale, Calif.
Gray Co., Inc., Minneapolis, Minn.
Grove Valve and Regulator Co., Oakland, Calif.
Hagan Chemicals & Controls, Inc., Pittsburgh, Pa.
Hanna Engineering Wks., Chicago, Ill.
Hannifin Corp., DesPlaines, Ill.
Hays Corp., Michigan City, Ind.
Hoffman Specialty Mfg. Corp., Indianapolis.
Hubbell Corp., Mundelein, Ill.
Illinois Engineering Products, American Air Filter Co., Inc., Louisville, Ky.
Jordan Corp., Div. of OPW Corp., Cincinnati.
Keckley Co., O. C., Skokie, Ill.
Kieley & Mueller, Inc., Middletown, N. Y.
Klipfel Valves, Inc., Hamilton, O.
Leslie Co., Lyndhurst, N. J.
Manning, Maxwell & Moore, Inc., Stratford, Conn.
Mason-Nielan, Div. of Worthington Corp., Norwood, Mass.
McAlear Mfg. Co., Chicago, Ill.
Mercoid Corp., The, Chicago, Ill.
Minneapolis-Honeywell Regulator Co., Industrial Div., Philadelphia, Pa.
Modern Engineering Co., St. Louis, Mo.
Moore Products Co., Philadelphia, Pa.
Mueller Co., Decatur, Ill.
National Cylinder Gas Div. of Chemetron Corp., Chicago, Ill.
Newark Controls Co., Bloomfield, N. J.
Nielsen, Inc., E. V., Stamford, Conn.
Norgren Co., C. A., Englewood, Colo.
Norwalk Valve Div., Eclipse Fuel Engineering Co., Rockford, Ill.
Penn Controls, Inc., Goshen, Ind.
Perfecting Service Co., Charlotte, N. C.
Powers Regulating Co., Skokie, Ill.
Reliance Instrument Mfg. Corp., Glen Cove, Long Island, N. Y.
Research Vacuum Supply Co., Chicago, Ill.
Rockwell Mfg. Co., Meter and Valve Div., Pittsburgh, Pa.
Ruggles-Klingemann Mfg. Co., Boston, Mass.
Sall Bros. Co., Rockford, Ill.
Schade Valve Co., Philadelphia, Pa.
Scientific Instrument Co., Detroit, Mich.
Shallcross Controls, Inc., Markesan, Wis.
Smith Welding Equipment Corp., Minneapolis, Minn.
Spence Engineering Co., Inc., Walden, N. Y.
Spray Engineering Co., Burlington, Mass.
Squires Co., C. E., The, Cleveland, O.
Strong, Carlisle & Hammond, Cleveland, O.
Taylor Instrument Companies, Rochester, N. Y.
Trerice Co., H. O., Detroit, Mich.
Tryco Products, Inc., Westfield, Mass.
United Electric Controls Co., Watertown, Mass.
Universal Controls Corp., Dallas, Tex.
Victor Equipment Co., Welding Equipment Div., San Francisco, Calif.
Warren Engineering Co., Broadway, N. J.
Water Cooling Corp., New York, N. Y.
Watson & McDaniel Co., Philadelphia, Pa.
Watts Regulator Co., Lawrence, Mass.
Weston Instruments, Div. of Daystrom, Inc., Newark, N. J.
Young Regulator Co., Cleveland, O.

REGULATORS, PRESSURE, GAS

Ace Instrument Co., Inc., Brooklyn, N. Y.
Allen-Bradley Co., Milwaukee, Wis.
American Flow Control Corp., Houston, Tex.
American Meter Co., Inc., Philadelphia, Pa.
Askania Regulator Co., Chicago, Ill.
Atlas Valve Co., Newark, N. J.
Bailey Co., Chas. M., San Francisco, Calif.
Black, Sivalls & Bryson, Inc., Kansas City, Mo.
Boylston Steam Specialty Co., Chicago, Ill.
Bristol Co., The, Waterbury, Conn.
Brooke Engineering Co., Inc., Philadelphia, Pa.
Cash Co., A. W., Decatur, Ill.
Cash Valve Mfg. Corp., A. W., Decatur, Ill.
Chaplin-Fulton Mfg. Co., Pittsburgh, Pa.
Clark Mfg. Co., Cleveland, O.
Conoflow Corp., Subsidiary of Walworth Co., Philadelphia, Pa.

Davis Regulator Co., Chicago, Ill.
d'Este Div., Kaye & MacDonald, Inc., West Orange, N. J.
Deutsch Co., The, Los Angeles, Calif.
Dockson Corp., Detroit, Mich.
Eclipse Fuel Engineering Co., Rockford, Ill.
Fischer & Porter Co., Hatboro, Pa.
Fisher Governor Co., Marshalltown, Ia.
Foster Engineering Co., Union, N. J.
Foxboro Co., Foxboro, Mass.
Fulton Sylphon Div., Robertshaw-Fulton Controls Co., Knoxville, Tenn.
Gas & Oil Industry Laboratories, Inc., Irvington, N. J.
General Controls Co., Glendale, Calif. and Skokie, Ill.
Grove Valve and Regulator Co., Oakland, Calif.
Hagan Chemicals & Controls, Inc., Pittsburgh, Pa.
Harris Calorific Co., The, Cleveland, O.
Hays Corp., Michigan City, Ind.
Hoffman Specialty Mfg. Corp., Indianapolis, Ind.
Hubbell Corp., Mundelein, Ill.
Jordan Corp., Div. of OPW Corp., Cincinnati.
K-G Equipment Co., Allentown, Pa.
Keckley Co., O. C., Skokie, Ill.
Kieley & Mueller, Inc., Middletown, N. Y.
Klipfel Valves, Inc., Hamilton, O.
Leslie Co., Lyndhurst, N. J.
Liquid Carbonic Div. of General Dynamics Corp., Chicago, Ill.
Major Controls, Corona, Calif.
Mason-Neilan, Div. of Worthington Corp., Norwood, Mass.
Maxitrol Co., Detroit, Mich.
McAlear Mfg. Co., Chicago, Ill.
Mercoid Corp., The, Chicago, Ill.
Minneapolis-Honeywell Regulator Co., Industrial Div., Philadelphia, Pa.
Modern Engineering Co., St. Louis, Mo.
Moore Products Co., Philadelphia, Pa.
Mueller Co., Decatur, Ill.
National Cylinder Gas Div. of Chemetron Corp., Chicago, Ill.
North American Mfg. Co., Cleveland, O.
Norwalk Valve Div., Eclipse Fuel Engineering Co., Rockford, Ill.
Penn Controls, Inc., Goshen, Ind.
Pure Carbonic Co., Div. of Air Reduction Co., Inc., New York, N. Y. (carbon dioxide)
Refrigerating Specialties Co., Chicago, Ill.
Reliance Instrument Mfg. Corp., Glen Cove, Long Island, N. Y.
Republic Flow Meters Co., Chicago, Ill. (Industrial)
Research Vacuum Supply Co., Chicago, Ill.
Rockwell Mfg. Co., Meter and Valve Div., Pittsburgh, Pa.
Ruggles-Klingemann Mfg. Co., Boston, Mass.
Schade Valve Mfg. Co., Philadelphia, Pa.
Scientific Instrument Co., Detroit, Mich.
Shallcross Controls, Inc., Markesan, Wis.
Smith Welding Equipment Corp., Minneapolis, Minn.
Spence Engineering Co., Inc., Walden, N. Y.
Squires Co., C. E., The, Cleveland, O.
Strong, Carlisle & Hammond, Cleveland, O.
Taylor Instrument Companies, Rochester, N. Y.
Thermac Co., Corona, Calif.
Trerice Co., H. O., Detroit, Mich.
United Electric Controls Co., Watertown, Mass.
Universal Controls Corp., Dallas, Tex.
Victor Equipment Co., Welding Equipment Div., San Francisco, Calif.
Warren Engineering Co., Broadway, N. J.
Watson & McDaniel Co., Philadelphia, Pa.
Watts Regulator Co., Lawrence, Mass.
Weldit, Inc., Detroit, Mich.
Weston Instruments, Div. of Daystrom, Inc., Newark, N. J.

REGULATORS, PRESSURE, HOT WATER HEATING SYSTEMS

Bailey Co., Chas., M., San Francisco, Calif.
Beaton & Cadwell Mfg. Co., New Britain, Conn.
Bell & Gossett Co., Morton Grove, Ill.
Boylston Steam Specialty Co., Chicago, Ill.
Brooke Engineering Co., Inc., Philadelphia, Pa.
Burrows Mfg. Co., F. A., York, Pa.
Cash Valve Mfg. Corp., A. W., Decatur, Ill.
Clark Mfg. Co., Cleveland, O.
d'Este Div., Kaye & MacDonald, Inc., West Orange, N. J.
Defender Instrument and Regulator Co., Boody, Ill.
Detroit Controls Div. of American-Standard, Detroit, Mich.
Fisher Governor Co., Marshalltown, Ia.
Hays Corp., The, Michigan City, Ind.
Hoffman Specialty Mfg. Corp., Indianapolis, Ind.
Illinois Engineering Products, American Air Filter Co., Inc., Louisville, Ky.
Jordan Corp., Div. of OPW Corp., Cincinnati, O.
Keckley Co., O. C., Skokie, Ill.
Kehm Corp., The, Chicago, Ill.
Klipfel Valves, Inc., Hamilton, O.
Leslie Co., Lyndhurst, N. J.
McAlear Mfg. Co., Chicago, Ill.
Mercoid Corp., The, Chicago, Ill.
Mueller Co., Decatur, Ill.
Penn Controls, Inc., Goshen, Ind.
Powers Regulator Co., Skokie, Ill.
Quality Specialty Co., Inc., Camden, N. J.
Sall Bros. Co., Rockford, Ill.
Sarcotherm Controls, Inc., New York, N. Y.
Scientific Instrument Co., Detroit, Mich.
Squires Co., C. E., The, Cleveland, O.
Taco Heaters, Inc., Cranston, R. I.
Thrush & Co., H. A., Peru, Ind.
Trane Co., The, LaCrosse, Wis.
Trerice Co., H. O., Detroit, Mich.
Tryco Products, Inc., Westfield, Mass.
Watts Regulator Co., Lawrence, Mass.
Webster & Co., Warren, Camden, N. J.
White-Rodgers Co., St. Louis, Mo.

REGULATORS, PRESSURE, LIQUID

Allen-Bradley Co., Milwaukee, Wis.
American Flow Control Corp., Houston, Tex.
Askania Regulator Co., Chicago, Ill.
Atlas Valve Co., Newark, N. J.
Automatic Control Co., St. Paul, Minn.
Bailey Co., Chas. M., San Francisco, Calif.
Beaton & Cadwell Mfg. Co., New Britain, Conn.
Binks Mfg. Co., Chicago, Ill.
Black Mfg. Co., Baltimore, Md.
Black, Sivalls & Bryson, Inc., Kansas City, Mo.
Boylston Steam Specialty Co., Chicago, Ill.
Bristol Co., The, Waterbury, Conn.
Brooke Engineering Co., Inc., Philadelphia, Pa.
Cash Co., A. W., Decatur, Ill.
Cash Valve Mfg. Corp., A. W., Decatur, Ill.
Clark Controller Co., Cleveland, O.
Cla-Val Co., Newport Beach, Calif.
Conoflow Corp., Subsidiary of Walworth Co., Philadelphia, Pa.
Copes-Vulcan Div., Blaw-Knox Co., Erie, Pa.
Cutler-Hammer, Inc., Milwaukee, Wis.
Davis Regulator Co., Chicago, Ill.
Defender Instrument and Regulator Co., Boody, Ill.
d'Este Div., Kaye & MacDonald, Inc., West Orange, N. J.
Eddington Metal Specialty Co., Eddington, Pa.
Fisher Governor Co., Marshalltown, Ia.
Foster Engineering Co., Union, N. J.
Foxboro Co., Foxboro, Mass.
Fulton Sylphon Div., Robertshaw-Fulton Controls Co., Knoxville, Tenn.
Golden-Anderson Valve Specialty Co., Pittsburgh, Pa.
Gray Co., Inc., Minneapolis, Minn.
Grove Valve and Regulator Co., Oakland, Calif.
Hagan Chemicals & Controls, Inc., Pittsburgh, Pa.
Hays Corp., Michigan City, Ind.
Healy Ruff Co., St. Paul, Minn.
Hoffman Specialty Mfg. Corp., Indianapolis, Ind.
Hubbell Corp., Mundelein, Ill.
Johnson Service Co., Milwaukee, Wis.
Jordan Corp., Div. of OPW Corp., Cincinnati.
Keckley Co., O. C., Skokie, Ill.
Kieley & Mueller, Inc., Middletown, N. Y.
Klipfel Valves, Inc., Hamilton, O.
Leslie Co., Lyndhurst, N. J.
Locke Regulator Co., Salem, Mass.
Mason-Neilan, Div. of Worthington Corp., Norwood, Mass.
McAlear Mfg. Co., Chicago, Ill.
McDonnell & Miller, Inc., Chicago, Ill.
Mercoid Corp., The, Chicago, Ill.
Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.
Minneapolis-Honeywell Regulator Co., Industrial Div., Philadelphia, Pa.
Monarch Mfg. Wks., Inc., Philadelphia, Pa.
Mueller Co., Decatur, Ill.
Myers & Bro. Co., F. E., The, Ashland, O.
Norgren Co., C. A., Englewood, Colo.
Penn Controls, Inc., Goshen, Ind.
Powers Regulator Co., Skokie, Ill.
Republic Flow Meters Co., Chicago, Ill.
Ruggles-Klingemann Mfg. Co., Boston, Mass. (industrial)
Schade Valve Mfg. Co., Philadelphia, Pa.
Scientific Instrument Co., Detroit, Mich.
Spence Engineering Co., Inc., Walden, N. Y.
Squires Co., C. E., The, Cleveland, O.
Strong, Carlisle & Hammond, Cleveland, O.
Taylor Instrument Companies, Rochester, N. Y.
Trerice Co., H. O., Detroit, Mich.
Tryco Products, Inc., Westfield, Mass.
United Electric Controls Co., Watertown Mass.
Warren Engineering Co., Broadway, N. J.
Water Cooling Corp., New York, N. Y.
Watson & McDaniel Co., Philadelphia, Pa.
Watts Regulator Co., Lawrence, Mass.
White-Rodgers Co., St. Louis, Mo.
Wilkins Regulator Co., Los Angeles, Calif. (hot and cold water)
Williams Gauge Co., Inc., The, Pittsburgh, Pa. (Feed water)

REGULATOR, STATIC PRESSURE, AIR DUCT

Ace Instrument Co., Inc., Brooklyn, N. Y.
Bailey Co., Chas. M., San Francisco, Calif.
Bristol Co., The, Waterbury, Conn.
Brooke Engineering Co., Inc., Philadelphia, Pa.
Cash Co., A. W., Decatur, Ill.
Dietz Co., Henry G., Long Island City, N. Y.
General Controls Co., Glendale, Calif.
Hays Corp., Michigan City, Ind.
Johnson Service Co., Milwaukee, Wis.
Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.
Minneapolis-Honeywell Regulator Co., Industrial Div., Philadelphia, Pa.
Powers Regulator Co., Skokie, Ill.
Reliance Instrument Mfg. Corp., Glen Cove, Long Island, N. Y.
Shallcross Controls, Inc., Markesan, Wis.
Weston Instruments, Div. of Daystrom, Inc., Newark, N. J.

REGULATORS, TEMPERATURE

A-P Controls Div., Controls Co. of America, Milwaukee, Wis.
Acro Div., Robertshaw-Fulton Controls Co., Columbus, O.
Aerco Corp., Northvale, N. J.
Allen-Bradley Co., Milwaukee, Wis.
American Instrument Co., Inc., Silver Spring, Md.
Assembly Products, Inc., Chesterland, O.
Atlas Valve Co., Newark, N. J.
Au-Temp-Co Corp., New York, N. Y.
Automatic Devices Co., Inc., Western Springs, Ill.
Bailey Co., Chas. M., San Francisco, Calif.
Barber-Colman Co., Rockford, Ill.
Bell & Gossett Co., Morton Grove, Ill.
Black, Sivalls & Bryson, Inc., Kansas City, Mo.
Bristol Co., The, Waterbury, Conn.
Burling Instrument Co., Air Conditioning Div., Chatham, N. J.
Cash Co., A. W., Decatur, Ill.
Century Instrument Co., Detroit, Mich.
Conoflow Corp., Subsidiary of Walworth Co., Philadelphia, Pa.
Crown Controls Co., Inc., New Bremen, O.
Cutler-Hammer, Inc., Milwaukee, Wis.
Defender Instrument and Regulator Co., Boody, Ill.
d'Este Div., Kaye & MacDonald, Inc., West Orange, N. J.
Detroit Controls Div. of American-Standard, Detroit, Mich.
Eclipse Fuel Engineerig Co., Rockford, Ill.
Fenwal Inc., Ashland, Mass.
Fischer & Porter Co., Hatboro, Pa.
Foster Engineering Co., Union, N. J.
Foxboro Co., Foxboro, Mass.
Fulton Sylphon Div., Robertshaw-Fulton Controls Co., Knoxville, Tenn.
General Controls Co., Glendale, Calif. and Skokie, Ill.
General Electric Co., Appliance Control Dept., Morrison, Ill.

H-B Instrument Co., Philadelphia, Pa.
Hagan Chemicals & Controls, Inc., Pittsburgh, Pa.
Hays Corp., Michigan City, Ind.
Heat-Timer Corp., New York, N. Y.
Hoffman Specialty Mfg. Corp., Indianapolis
Instrument Div., Robertshaw-Fulton Controls Co., Philadelphia, Pa.
Johnson Service Co., Milwaukee, Wis.
Jordan Corp., Div. of OPW Corp., Cincinnati, O.
Keckley Co., O. C., Skokie, Ill.
Klipfel Valves, Inc., Hamilton, O.
Lawler Automatic Controls, Inc., Mount Vernon, N. Y.
Leslie Co., Lyndhurst, N. J.
Locke Regulator Co., Salem, Mass.
Manning, Maxwell & Moore, Inc., Stratford, Conn.
McAlear Mfg. Co., Chicago, Ill.
McCorkle Co., D. H., Berkeley, Calif.
McDonnell & Miller, Inc., Chicago, Ill.
Mercoid Corp., Chicago, Ill.
Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.
Minneapolis-Honeywell Regulator Co., Industrial Div., Philadelphia, Pa.
Partlow Corp., The, New Hartford, N. Y.
Penn Controls, Inc., Goshen, Ind.
Philadelphia Thermometer Co., Philadelphia.
Powers Regulator Co., Skokie, Ill.
Ranco Inc., Columbus, O.
Ruggles-Klingemann Mfg. Co., Boston, Mass.
Sarco Co., Inc., New York, N. Y.
Sarcotherm Controls, Inc, New York, N. Y.
Scaico Controls Inc., Delanco, N. J.
Scientific Instrument Co., Detroit, Mich.
Spence Engineering Co., Inc., Walden, N. Y.
Spencer Thermostat Div., Metals & Controls Corp., Attleboro, Mass.
Squires Co., C. E. The, Cleveland, O.
Sterling, Inc., Milwaukee, Wis.
Swartwout Co., The, Cleveland, O.
Taylor Instrument Companies, Rochester, N. Y.
Trerice Co., H. O., Detroit, Mich.
Triplex Heating Specialty Co., Inc., Peru, Ind.
United Electric Controls Co., Watertown, Mass.
Warren Engineering Co., Broadway, N. J.
Watson & McDaniel Co., Philadelphia, Pa.
Watts Regulator Co., Lawrence, Mass.
West Instrument Corp., Chicago, Ill.
Weston Instruments, Div. of Daystrom, Inc., Newark, N. J.
Wheelco Instruments Co., Chicago, Ill.
White-Rodgers Co., St. Louis, Mo. (Hydraulic-Action)
Yellow Springs Instrument Co., Inc., Yellow Springs, O.
Young Regulator Co., Cleveland, O.

REGULATORS, VACUUM

Associated Valve & Engineering Co., North Wales, Pa.
Cash Valve Mfg. Corp., A. W., Decatur, Ill.
Foster Engineering Co., Union, N. J.
Fulton Sylphon Div., Robertshaw-Fulton Controls Co., Knoxville, Tenn.
Hubbell Corp., Mundelein, Ill.
Johnson Service Co., Milwaukee, Wis.
Penn Controls, Inc., Goshen, Ind.
Squires Co., C. E., The, Cleveland, O.
Trerice Co., H. O., Detroit, Mich.
Victor Equipment Co., Welding Equipment Div., San Francisco, Calif.
Weston Instruments, Div. of Daystrom, Inc., Newark, N. J.

RELAYS, ELECTRICAL

A'G'A Div. of Elastic Stop Nut Corp. of America, Elizabeth, N. J. (time delay)
Advance Relays, Product of Electronics Div., Elgin National Watch Co., Elgin, Ill.
Aemco Inc., Mankato, Minn.
Airserco Mfg. Co., Inc., Pittsburgh, Pa.
Allen-Bradley Co., Milwaukee, Wis.
Allied Control Co., Inc., New York, N. Y.
American Instrument Co., Inc., Silver Spring, Md.
Arrow-Hart & Hegeman Elect. Co., Hartford, Conn.
Assembly Products, Inc., Chesterland, O.
Automatic Switch Co., Florham Park, N. J.
Barber-Colman Co., Rockford, Ill.
Barth Engineering & Mfg. Co., Inc., Milldale, Conn.
Baso, Inc., Milwaukee, Wis.
Benjamin Electric Mfg. Co., Des Plaines, Ill.
Better Engineered Controls, Los Angeles, Calif.
Bristol Co., The, Waterbury, Conn.
Clark Controller Co., Cleveland, O.
Consolidated Metal Products Corp., Albany, N. Y.
Controls Co. of America, Soreng Div., Schiller Park, Ill.
Cook Electric Co., Chicago, Ill.
Cutler-Hammer, Inc., Milwaukee, Wis.
Daytronic Corp., Dayton, O.
Deltron, Inc., Philadelphia, Pa.
Detroit Controls Div. of American-Standard, Detroit, Mich.
Ebert Electronics Corp., Queens Village, N. Y.
Edison Industries, Thomas A., Instrument Div., McGraw-Edison Co., West Orange, N. J.
Electro-Switch & Controls, Inc., Culver City, Calif.
Ess Instrument Co., Bergenfield, N. J.
Essex Wire Corp., Ft. Wayne, Ind.
General Controls Co., Glendale, Calif. and Skokie, Ill.
General Electric Co., Apparatus Sales Div., Schenectady, N. Y.
General Electric Co., Appliance Control Dept., Morrison, Ill.
Guardian Electric Mfg. Co., Chicago, Ill.
H-B Instrument Co., Philadelphia, Pa.
Hagan Chemicals & Controls, Inc., Pittsburgh, Pa.
Hart Mfg. Co., The, Hartford, Conn.
Haydon Co., A. W., Waterbury, Conn.
Heinemann Electric Co., Trenton, N. J.
International Business Machines Corp., New York, N. Y.
Leach Relay Co., Los Angeles, Calif.
Mallory & Co., Inc., P. R., Indianapolis, Ind.
McCorkle Co., D. H., Berkeley, Calif.
McQuay-Norris Mfg. Co., St. Louis, Mo.
Mercoid Corp., Chicago, Ill.
Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.
Minneapolis-Honeywell Regulator Co., Industrial Div., Philadelphia, Pa.
Monitor Controller, Rockland, Mass.
National Controls, Inc., Newton, Mass.
National Time & Signal Corp., Detroit, Mich.
Penn Controls, Inc., Goshen, Ind.
Philadelphia Thermometer Co., Philadelphia.
Potter & Brumfield Sales Co., Inc., Princeton, Ind.
Precision Thermometer & Instrument Co., Philadelphia, Pa.
Simpson Electric Co., Chicago, Ill.
Spencer Thermostat Div., Metals & Controls Corp., Attleboro, Mass. (motor starting relays)
Square D Co., Industrial Controller Div., Milwaukee, Wis.
Struthers-Dunn, Inc., Pitman, N. J.
Synchro-Start Products, Inc., Skokie, Ill.
Trerice Co., H. O., Detroit, Mich.
Triplex Heating Specialty Co., Inc., Peru, Ind.
Vapor Heating Corp., Chicago, Ill.
Ward Leonard Electric Co., Mt. Vernon, N. Y.
Westinghouse Electric Corp., Pittsburgh, Pa.
Weston Instruments, Div. of Daystrom, Inc., Newark, N. J.
Wheelock Signals, Inc., Long Branch, N. J.
White-Rodgers Co., St. Louis, Mo.
Zenith Electric Co., Chicago, Ill.

RELAYS, PNEUMATIC

Allen-Bradley Co., Milwaukee, Wis.
Bailey Meter Co., Cleveland, O.
Bristol Co., The, Waterbury, Conn.
Conoflow Corp., Subsidiary of Walworth Co., Philadelphia, Pa.
Foxboro Co., Foxboro, Mass.
Hagan Chemicals & Controls, Inc., Pittsburgh, Pa.
Johnson Service Co., Milwaukee, Wis.
Mercoid Corp., The, Chicago, Ill.
Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.
Minneapolis-Honeywell Regulator Co., Industrial Div., Philadelphia, Pa.
Moore Products Co., Philadelphia, Pa.
Powers Regulator Co., Skokie, Ill.
Trerice Co., H. O., Detroit, Mich.

RELIEF VALVES

See Valves, Relief

REPAIR CLAMPS

See Clamps, Pipe Repair

REPAIR PLUGS FOR TANKS

See Plugs, Repair, for Tanks

RESEATERS, VALVE

Chicago Specialty Mfg. Co., Chicago, Ill.
Crosby Valve & Gage Co., Wrentham, Mass.
Economy Valve Seat Co., Chicago, Ill.
Hammett Electric Mfg. Co., Kansas City, Mo.
Leavitt Machine Co., Orange, Mass.
Skinner Co., M. B., South Bend, Ind.
Superior Valve & Fittings Co., Pittsburgh, Pa.
Thor Power Tool Co., Aurora, Ill.

RETURN BENDS

See Bends, Pipe, Return

REVERSE REFRIGERATION CYCLE UNITS

See Units, Air Conditioning, Reverse Refrigeration Cycle

RINGS, BACKING, FOR PIPE WELDING

Alco Products, Inc., Schenectady, N. Y.
All-State Welding Alloys Co., Inc., White Plains, N. Y.
Arcos Corp., Philadelphia, Pa.
General Ceramics Corp., Keasbey, N. J.
Grinnell Co., Inc., Providence, R. I.
Midwest Piping Co., Inc., St. Louis, Mo.
Robvon Backing Ring Co., Elizabeth, N. J.
Stainless Processing Div., Wall Colmonoy Corp., Detroit, Mich.
Tube Turns Div. of Chemetron Corp., Louisville, Ky.
Wedge Protectors, Inc., Cleveland, O.
Wickwire Spencer Steel Div., The Colorado Fuel & Iron Corp., New York, N. Y.

RINGS, PISTON, FOR COMPRESSORS

Koppers Company, Inc., Metal Products Div., Baltimore, Md.
McQuay-Norris Mfg. Co., St. Louis, Mo.
On Mark Couplings, Los Angeles, Calif.
Perfect Circle Corp., Hagerstown, Ind.
Sealed Power Corp., Muskegon, Mich.

ROD, GAS WELDING

Air Reduction Sales Co., A Div. of Air Reduction Co., Inc., New York, N. Y.
All-State Welding Alloys Co., Inc., White Plains, N. Y.
Allied Weld-Craft, Inc., Indianapolis, Ind.
Aluminum Co. of America, Pittsburgh, Pa.
American Brass Co., Waterbury, Conn.
American Steel & Wire Div., United States Steel, Cleveland, O.
Atlantic Steel Co., Atlanta, Ga.
Bridgeport Brass Co., Bridgeport, Conn.
Central Steel & Wire Co., Chicago, Ill.
Crucible Steel Co. of America, Pittsburgh, Pa.
Duraloy Co., Scottdale, Pa. (Stainless)
Eutectic Welding Alloys Corp., Flushing, N. Y.
International Nickel Co., The, New York, N. Y.
K-G Equipment Co., Allentown, Pa.
Linde Co., Div. of Union Carbide Corp., New York, N. Y.
Marquette Mfg. Co., Inc., Minneapolis, Minn.
Maurath, Inc., Cleveland, O.
Metal & Thermit Corp., Rahway, N. J.
Mir-O-Col Alloy Co., Los Angeles, Calif. (for hard facing)
National Cylinder Gas Div. of Chemetron Corp., Chicago, Ill.
Page Steel & Wire Division of American Chain & Cable Co., Inc., Monessen, Pa.
Revere Copper and Brass, Inc., New York, N. Y.
Victor Equipment Co., Welding Equipment Div., San Francisco, Calif.
Weldit, Inc., Detroit, Mich.
Youngstown Sheet & Tube Co., Youngstown, O.

ROLLER BEARINGS

See Bearings, Roller

ROOF COOLERS
See Systems, Roof Spraying

ROOF SPRAYING SYSTEMS
See Systems, Roof Spraying

ROOF VENTILATORS
See Ventilators, Roof

ROOM HUMIDIFIERS
See Humidifiers, Unit, Room Type; and Units, Air Conditioning, Winter

ROOM THERMOSTATS
See Thermostats, Room or Wall

ROTARY PUMPS
See Pumps, Rotary

ROTATOR, PIPE, FOR HOLDING PIPE WHILE CUTTING, WELDING
Aronson Machine Co., Arcade, N. Y.
Peck Co., Cecil C., Cleveland, O.

RUBBER BELTING
See Belting, Flat, Rubber

RUBBER PACKING
See Packing, Rubber and Synthetic

RUBBER PIPE
See Pipe, Hard Rubber

SADDLE VALVES
See Valves, Saddle

SADDLE TEES
See Fittings, Pipe, Saddle Tee

SADDLES FOR PIPE
See Fittings, Pipe, Saddle Tee

SAFETY VALVES
See Valves, Safety, Steam

SALAMANDERS
See Heaters, Air, Direct Fired, Portable

SAWS, ELECTRIC, PORTABLE
Albertson & Co., Inc., Sioux City, Ia.
Black & Decker Mfg. Co., The, Towson, Md.
Chicago Pneumatic Tool Co., New York, N. Y.
Clipper Mfg. Co., Kansas City, Mo.
Eveready Briksaw Co., Kansas City, Mo. (for concrete)
Fenway Machine Co., Philadelphia, Pa.
Ingersoll-Rand Co., New York, N. Y.
Key-Hak Div., Producers & Distributors, Inc., Allentown, Pa.
Krieg, Inc., Victor J., New York, N. Y. (for cutting pipe)
Mall Tool Co., Div. of Remington Arms Co., Inc., Chicago, Ill.
Mid-States Welder Mfg. Co., **Chicago, Ill.**
Miller Falls Co., Greenfield, Mass.
Milwaukee Electric Tool Corp., **Milwaukee, Wis.**
Oster Mfg. Co., John, Milwaukee, Wis.
Portable Electric Tools, Inc., Chicago, Ill.
Porter-Cable Machine Co., Syracuse, N. Y.
R C S Tool Corp., Bloomington, Ill. (reciprocating)
Skil Corp., Chicago, Ill.
Speedway Mfg. Co., Div. of Thor Power Tool Co., Chicago (Cicero), Ill.
Stanley Works, The, New Britain, Conn.
Syntron Co., Homer City, Pa.
Thor Power Tool Co., Aurora, Ill.
United States Electrical Tool Co., Cincinnati, O.
Wachs Co., E. H., The, Chicago, Ill.
Wallace Supplies Mfg. Co., Chicago, Ill. **(for abrasive materials)**

SCAFFOLDS, PORTABLE
American Ladder & Scaffold Co., Inc., Miami, Fla.
Beaver-Advance Corp., Ellwood City, Pa.
Bil-Jax, Inc., Archbold, O.
Building Service Co., Minneapolis, Minn.
Up-Right Scaffolds, Berkeley, Calif.
Waco Steel Scaffolding, Inc., Waco, Tex.

SCALE CONTROL
See Devices, Electrolytic; Treatment, Steam System; Treatment, Water

SCALE REMOVAL, CHEMICAL SERVICE FOR
Anderson Chemical Co., Inc., Macon, Ga.
Anderson-Stolz Corp., Kansas City, Mo.
Aquatrol Ferr-X Corp., Clifton, N. J.
Aquatrol Laboratories, Inc., Clifton, N. J.
Brown-Electro Co., Oklahoma City, Okla. (electrolytic protector)
Calgon Co., Pittsburgh, Pa.
Chemical Solvent Co., Birmingham, Ala.
Dearborn Chemical Co., Chicago, Ill.
Dowell Div. of The Dow Chemical Co., Tulsa, Okla.
Magnus Chemical Co., Garwood, N. J.
North American Mogul **Products Co., The, Cleveland, O.**
Oakite Products, Inc., New York, N. Y.
Smith Chemical Co., E. W., La Puente, **Calif.**
Solvent Service, Inc., Painesville, O.

SCOOPS, AIR, FOR DEFLECTING FLOW IN DUCTS
A-J Mfg. Co., Kansas City, Mo.
Air Devices, Inc., New York, N. Y.
Cain Mfg. Co., Birmingham, Ala.
Duro-Dyne Corp., Farmingdale, Long Island, N. Y.
General Air Products Corp., Cedar Grove, N. J.
Krueger Air Conditioning Corp., Tucson, Ariz.
Titus Mfg. Corp., Waterloo, Ia.
Waterloo Register Co., Inc., Waterloo, Ia.

SCREENS, SUN REFLECTING
Federal Seaboard Terra Cotta Corp., New York, N. Y.
Kaiser Aluminum & Chemical Sales, Inc., Chicago, Ill.
Kane Mfg. Corp., Kane, Pa.
Reflectal Corp. Subsid., Borg-Warner Corp., Chicago, Ill.

SCREWS, SHEET METAL
Allmetal Screw Products Co., Inc., Garden City, Long Island, N. Y.
Aluminum Co. of America, Pittsburgh, Pa.
American Screw Co., Willimantic, Conn.
Anti-Corrosive Metal Products Co., Inc., Castleton-On-Hudson, N. Y.
Buffalo Bolt Co., Div. of Buffalo-Eclipse Corp., North Tonawanda, N. Y.
Continental Screw Co., New Bedford, Mass.
Elco Tool & Screw Corp., Rockford, Ill.
Harper Co., H. M., **Morton Grove, Ill.**
Industrial Screw Co., Chicago, Ill.
Lamson & Sessions Co., Cleveland, O.
National Lock Co., Inc., Rockford, Ill.
Paine Co., Addison, Ill.
Parker-Kalon Div., General American Transportation Corp., Clifton, N. J
Pheoll Mfg. Co., Industrial Fastener Div., Chicago, Ill.
Rockford **Screw Products Co., Rockford, Ill.**
Russell, **Burdsall & Ward Bolt & Nut Co., Port Chester, N. Y.**
Scovill Mfg. Co., Waterbury, Conn.
Shakeproof **Div., Illinois Tool Wks., Elgin, Ill.**
Star **Stainless Screw Co., Paterson, N. J.**

SCREWS, SHEET METAL, WELDING
American Screw Co., Willimantic, Conn.
Anti-Corrosive Metal Products Co., Inc., Castleton-On-Hudson, N. Y.
Ohio Nut & Bolt Co., Berea, O.
Parker-Kalon Div., General American Transportation Corp., Clifton, N. J.
Russell, Burdsall & Ward Bolt & Nut Co., Ft. Chester, N. Y.

SEALS, SHAFT, MECHANICAL
Anchor Packing Co., Philadelphia, Pa.
Borg-Warner Mechanical Seals, Div. of Borg-Warner Corp., Los Angeles, Calif.
Chicago Belting Div., **Chicago-Allis Mfg.** Corp., Chicago, Ill
Clifford Mfg. Co., Div. of Standard-Thomson Corp., **Waltham, Mass.**
Crane Packing Co., Morton Grove, Ill.
Felt Products Mfg. Co., Skokie, Ill.
Fulton Sylphon Div., Robertshaw-Fulton Controls Co., Knoxville, Tenn.
Garlock Packing Co., Palmyra, N. Y.
Greene, Tweed & Co., North Wales, Pa.
Johns-Manville, New York, N. Y.

Koppers Company, Inc., Metal Products Div., Baltimore, Md.
Magnetic Seal Corp., Barrington, R. I.
Navan Products Inc., Los Angeles, Calif.
Parker Seal Co., Culver City, Calif.
Rotary Seal Div., Muskegon Piston Ring Co., Chicago, Ill.
Schwitzer Corp., Indianapolis, Ind.
Sealol Corp., Providence, R. I.
Syntron Co., Homer City, Pa.
United States Gasket Co., Camden, N. J.

SEALS, TERMINAL, FOR COMPRESSORS
Lancaster Pump & Mfg. Co., Lancaster, Pa.
Minnesota Rubber Co., Minneapolis, Minn.
Navan Products Inc., Los Angeles, Calif.
Parker Seal Co., Culver City, Calif.

SEAMLESS PIPE
See Pipe, Steel, Seamless

SEPARATORS, AIR
Adams Co., Inc., R. P., **Buffalo, N. Y.**
Adsco Div., Yuba Consolidated Industries, Inc., Buffalo, N. Y.
Anderson Co., V. D., The, Div. of International Basic Economy Corp., Cleveland, O.
Automatic Switch Co., Florham Park, N. J.
Binks Mfg. Co., Chicago, Ill.
Buxton Mfg. Co., Dover, N. J.
Centrifix Corp., Cleveland, O.
Clark Mfg. Co., Cleveland, O.
Combustion Engineering, Inc., New York, N. Y.
Crane Co., Chicago, Ill.
DeVilbiss Co., The, Toledo, O.
Dollinger Corp., Rochester, N. Y.
Dunham-Bush, Inc., West Hartford, Conn.
Gray Co., Inc., Minneapolis, Minn.
Hagan Chemicals & Controls, Inc., Pittsburgh, Pa.
Harman Equipment Co., Los Angeles, Calif.
Hoffman Specialty Mfg. Corp., Indianapolis, Ind.
Johnson Corp., Three Rivers, Mich.
Kaye & MacDonald, Inc., West Orange, N. J.
Kice Metal Products Co., Wichita, Kans.
Kraissl Co., Inc., The, Hackensack, N. J.
Leavitt Machine Co., Orange, Mass.
Nicholson & Co., W. H., Wilkes-Barre, Pa.
Quality Specialty Co., Inc., Camden, N. J.
Spencer Turbine **Co., Hartford, Conn.**
Spray Engineering Co., Burlington, Mass.
Strong, Carlisle & Hammond, Cleveland, O.
Taco Heaters, Inc., Cranston, R. I.
Trane Co., The, La Crosse, Wis.
Vortox Co., Claremont, Calif.
Watts Regulator Co., Lawrence, Mass.
Wright-Austin Co., Detroit, Mich.

SEPARATORS, BLOWDOWN
Graver Water Conditioning Co., New York, N. Y.
Wilson Engineering Corp., Chicago, Ill.

SEPARATORS, FLANGE
Kraissl Co., Inc., The, Hackensack, N. J.
Williams & Co., J. H., Buffalo, N. Y.
Wright-Austin Co., Detroit, Mich.

SEPARATORS, OIL
Acme Industries, Inc., Jackson, Mich.
Adams Co., Inc., R. P., Buffalo, N. Y.
Adsco Div., Yuba Consolidated Industries, Inc., Buffalo, N. Y.
Air-Maze Corp., Cleveland, O.
Aminco Refrigeration Products, American Injector Co., Detroit, Mich.
Anders Lykens Corp., Div. of Milton Roy Co., Philadelphia, Pa.
Anderson Co., V. D., The, Div. of International Basic Economy Corp., Cleveland, O.
Boylston Steam Specialty Co., Chicago, Ill.
Centrifix Corp., Cleveland, O. (Gas and Vapor)
Cochrane Corp., Philadelphia, Pa.
Condenser Service & Engineering Co., Inc., Hoboken, N. J.
Crane Co., Chicago, Ill.
Dunham-Bush, Inc., West Hartford, Conn.
Graver Water Conditioning Co., New York, N. Y.
Hagan Chemicals & Controls, Inc., Pittsburgh, Pa.

Harman Equipment Co., Los Angeles, Calif.
Heat-X, Inc., Subsidiary of Dunham-Bush, Inc., West Hartford, Conn.
Hoppes Mfg. Co., Inc., Springfield, O.
Howe Ice Machine Co., Chicago, Ill.
Infilco, Inc., Tucson, Ariz.
Johnson Corp., The, Three Rivers, Mich.
Kaye & MacDonald, Inc., West Orange, N. J.
King Zeero Co., The, Chicago, Ill.
Kraissl Co., Inc., The, Hackensack, N. J.
Manufacturers Engineering & Equipment Corp., Hatboro, Pa.
National Valve & Mfg. Co., Pittsburgh, Pa.
Nicholson & Co., W. H., Wilkes-Barre, Pa.
Reco Products Div., Recony Corp., New York, N. Y.
Richmond Engineering Co., Richmond, Va.
Schutte and Koerting Co., Cornwells Heights, Bucks County, Pa.
Sims Co., Erie, Pa.
Stickle Steam Specialties Co., Indianapolis, Ind.
Strong, Carlisle & Hammond, Cleveland, O.
Techniflex Corp., Port Jervis, N. Y.
Temprite Products Corp., Dept. HPAC, Birmingham, Mich.
Vilter Mfg. Co., The, Milwaukee, Wis.
Wabash Corp., Chicago, Ill.
Wade Mfg. Co., Elgin, Ill.
Warner Lewis Co., Div. of Fram Corp., Tulsa, Okla.
Watkins Co., J. E., Maywood, Ill.
Worthington Corp., East Orange, N. J.
Wright-Austin Co., Detroit, Mich.
York Corp., Subsidiary of Borg-Warner Corp., York, Pa.

SETS, PIPE BIT, FOR BORING HOLES IN WOOD FOR PIPE AND TUBING

Greenlee Tool Co., Div. of Greenlee Bros. & Co., Rockford, Ill.

SEWAGE EJECTORS

See Ejectors, Sewage

SEWAGE PUMPS

See Pumps, Sewage

SHAFT SEALS, MECHANICAL

See Seals, Shaft, Mechanical

SHAFTS, FLEXIBLE, FOR CONTROL

Albertson & Co., Inc., Sioux City, Ia.
Arena Controls, Inc., Evanston, Ill.
Atmos Corp., Chicago, Ill.
Clark Flexible Link Shaft Co., Newton Highlands, Mass.
Healey Co., Lee, Glendale, Calif.
Imperial Brass Mfg. Co., Chicago, Ill.
Piezo Mfg. Corp., Staten Island, N. Y.
Stow Mfg. Co., Binghamton, N. Y.
Teleflex Incorporated, North Wales, Pa.

SHEARS, ELECTRICAL, PORTABLE

Beverly Shear Mfg. Co., Chicago, Ill.
Black & Decker Mfg. Co., Towson, Md.
Jemco Tool Corp., Seneca Falls, N. Y.
M-M-A, Inc., Lancaster, Pa.
Mall Tool Co., Div. of Remington Arms Co., Inc., Chicago, Ill.
Miller Falls Co., Greenfield, Mass.
Skil Corp., Chicago, Ill.
Stanley Electric Tools, Div. of The Stanley Works, New Britain, Conn.
Stanley Works, The, New Britain, Conn.
Thor Power Tool Co., Aurora, Ill.

SHEARS, POWER

Barth Engineering & Mfg. Co., Inc., Milldale, Conn.
Bertsch & Co., Inc., Cambridge City, Ind.
Beverly Shear Mfg. Co., Chicago, Ill.
Buckeye Tools Corp., Dayton, O.
Buffalo Forge Co., Buffalo, N. Y. (portable)
Cincinnati Shaper Co., Cincinnati, O.
Cleveland Crane & Eng. Co., Wickliffe, O.
Cleveland Punch & Shear Works Co., Cleveland, O.
Diamond Machine Tool Co., Pico, Calif.
Famco Machine Co., Kenosha, Wis.
H-A Mfg. Co., York, Pa.
Hendley & Whittemore, Beloit, Wis.
Kling Bros. Engineering Works, Chicago, Ill. (rotary) (double angle)
Libert Machine Co., Green Bay, Wis.
Mall Tool Co., Div. of Remington Arms Co., Inc., Chicago, Ill.
Marshalltown Mfg. Co., Marshalltown, Ia.
Niagara Machine & Tool Wks., Buffalo, N. Y.
O'Neil-Irwin Mfg. Co., Lake City, Minn.
Peck, Stow & Wilcox Co., Southington, Conn.
Quickwork Div., Whiting Corp., Harvey, Ill.
Ryerson & Son, Inc., Joseph T., Chicago, Ill.
St. Louis Tool Co., St. Louis, Mo.
Stamco Inc., New Bremen, Ohio
Whiting Corp., Harvey, Ill.
Whitney Mfg. Co., W. A., Rockford, Ill.
Whitney Metal Tool Co., Rockford, Ill.
Wysong & Miles Inc., Greensboro, N. C.

SHEARS AND SNIPS, HAND

Barlett Mfg. Co., Detroit, Mich.
Basford Co., H. R., San Francisco, Calif.
Beverly Shear Mfg. Co., Chicago, Ill.
Billings & Spencer Co., Hartford, Conn.
Black & Decker Mfg. Co., Towson, Md. (electrically driven)
Bremil Mfg. Co., Erie, Pa.
Champion Blower & Forge Co., Lancaster, Pa.
Clauss Cutlery Co., Fremont, O.
Crescent Tool Co., Jamestown, N. Y.
Diamond Tool & Horseshoe Co., Duluth, Minn.
Fairmount Tool & Forging, Inc., Cleveland, O.
Hendley & Whittemore, Beloit, Wis.
Kidder Mfg. Co., Inc., J. F. Burlington, Vt.
Klenk's Aviation Snips, Wilmington, Del.
Lidseen of North Carolina, Inc., Hayesville, N. C.
Niagara Machine & Tool Wks., Buffalo, N. Y.
O'Neil-Irwin Mfg. Co., Lake City, Minn.
Peck, Stow & Wilcox Co., Southington, Conn.
Proto Tool Co., Div. of Pendleton Tool Industries, Inc., Los Angeles, Calif.
Snap-on Tools Corp., Kenosha, Wis.
Thor Tool & Die Co., San Leandro, Calif.
Viking Shear Co., Erie, Pa.
Whitney Mfg. Co., W. A., Rockford, Ill.
Wiss & Sons Co., J., Newark, N. J.

SHEAVES

See Pulleys and Sheaves, for Belt Drives

SHEET METAL BRAKES

See Brakes, Sheet Metal

SHEET METAL DUCTS

See Ducts and Duct Fittings, Prefabricated Non-Flexible

SHEET METAL FITTINGS

See Ducts and Duct Fittings, Prefabricated Non-Flexible

SHEET METAL PUNCHES

See Punches, Sheet Metal

SHEETS, ALUMINUM

Aluminum Co. of America, Pittsburgh, Pa.
Brass & Copper Imports, Inc., Minneapolis, Minn.
Central Steel & Wire Co., Chicago, Ill.
Cochran Foil Corp., A Subsidiary of the Anaconda Co., Louisville, Ky.
Fairmont Aluminum Co., Fairmont, W. Va.
Frasse & Co., Inc., Peter A., New York, N. Y.
Hunter Mfg. Co., Aluminum Insulation Div., Bristol, Pa. (for pipe covering)
Kaiser Aluminum & Chemical Sales, Inc., Chicago, Ill.
Mueller Brass Co., Port Huron, Mich.
Revere Copper and Brass, Inc., New York.
Reynolds Metals Co., Richmond, Va.
Rigidized Metals Corp., Buffalo, N. Y.
Ryerson & Son, Inc., Joseph T., Chicago, Ill.

SHEETS, ALUMINUM COATED

Armco Steel Corp., Middletown, O.
Brass & Copper Imports, Inc., Minneapolis, Minn.
Rigidized Metals Corp., Buffalo, N. Y.
United States Steel Corp., Pittsburgh, Pa.

SHEETS AND BOARD, NON-METALLIC (OTHER THAN PLASTIC), FOR DUCT CONSTRUCTION

Carey Mfg. Co., Philip, Lockland, Cincinnati, O.
Celotex Corp., The, Chicago, Ill.
Johns-Manville, New York, N. Y.
Keasbey & Mattison Co., Ambler, Pa.
Met-L-Wood Corp., Chicago, Ill. (plywood composition material faced with sheet metal)
Nicolet Industries, Inc., Hamilton, O.
Norristown Asbestos Div., Nicolet Industries, Inc., Norristown, Pa.
Ruberoid Co., New York, N. Y.
Technical Ply-Woods Sales, Chicago, Ill.

SHEETS, CLAD

Allegheny Ludlum Steel Corp., Pittsburgh, Pa.
Aluminum Co. of America, Pittsburgh, Pa.
Bart Mfg. Corp., Belleville, N. J.
Bridgeport Brass Co., Bridgeport, Conn. (laminates)
Central Steel & Wire Co., Chicago, Ill. (aluminum)
Engelhard Industries, Inc., Newark, N. J.
General Plate Div., Metals & Controls Corp., Attleboro, Mass.
Ingersoll Steel Div., Borg-Warner Corp., Chicago, Ill. (stainless)
Jessop Steel Co., Washington, Pa.
Lukens Steel Co. and Divisions, Coatesville, Pa.
Republic Steel Corp., Cleveland, O.
Revere Copper & Brass, Inc., New York.
Rigidized Metals Corp., Buffalo, N. Y.

SHEETS, COPPER

American Brass Co., Waterbury, Conn.
Brass & Copper Imports, Inc., Minneapolis, Minn.
Bridgeport Brass Co., Bridgeport, Conn.
Central Steel & Wire Co., Chicago, Ill.
Chase Brass & Copper Co., Waterbury, Conn.
Hussey & Co., C. G., Div. of Copper Range Co., Pittsburgh, Pa.
New Haven Copper Co., The, Seymour, Conn.
Olin Mathieson Chemical Corp., Metals Div., East Alton, Ill. (Brass, bronze, super X, phosphor bronze)
Revere Copper & Brass, Inc., New York.
Rigidized Metals Corp., Buffalo, N. Y.

SHEETS, LEAD

Alpha Metals, Inc., Jersey City, N. J.
American Smelting & Refining Co., Federated Metals Div., New York, N. Y.
Anchor Metal Co., Inc., Brooklyn, N. Y.
Belmont Smelting & Refining Wks., Inc., Brooklyn, N. Y.
Bunker Hill Co., The, Sales & Fabrication Div., Seattle, Wash.
Division Lead Co., Summit, Ill.
Flemm Lead Co., Inc., Long Island City, N. Y.
Gardiner Metal Co., Chicago, Ill.
Knapp Mills, Inc., Long Island City, N. Y.
National Lead Co., New York, N. Y.
Revere Copper & Brass, Inc., Foil Div., Brooklyn, N. Y.
Rigidized Metals Corp., Buffalo, N. Y.
Rochester Lead Wks., Inc., Rochester, N. Y.

SHEETS, MAGNESIUM ALLOY

Dow Chemical Co., The, Midland, Mich.
Rigidized Metals Corp., Buffalo, N. Y.

SHEETS, METAL, WITH PROTECTIVE NON-METALLIC COATING

American Steel Band Co., Pittsburgh, Pa.
Brass & Copper Imports, Inc., Minneapolis, Minn.
Ervite Corp., Erie, Pa.
Pittsburgh Steel Co., Pittsburgh, Pa.
Plasteel Products Corp., Washington, Pa.
Rigidized Metals Corp., Buffalo, N. Y.
Robertson Co., H. H., Pittsburgh, Pa.
Technical Ply-Woods Sales, Chicago, Ill. (Metal and plywood)

SHEETS, NICKEL AND NICKEL ALLOY

Bart Mfg. Corp., Belleville, N. J.
Central Steel & Wire Co., Chicago, Ill.

Chase Brass & Copper Co., Waterbury, Conn.
Haynes Stellite Co., Div. of Union Carbide Corp., New York, N. Y.
International Nickel Co., Inc., The, New York, N. Y.
Lukens Steel Co. and Divisions, Coatesville, Pa.
Olin Mathieson Chemical Corp., Metals Div., East Alton, Ill.
Revere Copper and Brass, Inc., New York, N. Y.
Rigidized Metals Corp., Buffalo, N. Y.

SHEETS, PLASTIC, FOR DUCTS AND HOODS

Argo Plastic Products, Cleveland, O.
Atlas Mineral Products Co., Mertztown, Pa.
Bolta Products, A Div. of General Tire & Rubber Co., Lawrence, Mass.
Byers Co., A. M., Pittsburgh, Pa. (Rigid PVC)
Campco Div., Chicago Molded Products Corp., Chicago, Ill.
Ceilcote, Inc., Cleveland, O.
Colonial Plastics Mfg. Co., Industrial Div., Cleveland, O. (Polyvinyl chloride)
Corite Products, Inc., Chicago, Ill.
DuVerre, Inc., Buffalo, N. Y.
General Electric Co., Laminated Products Dept., Coshocton, O.
Formica Corp., The, Cincinnati, O.
Goodrich Industrial Products Co., B. F., Akron, O. (rigid)
Goodrich Industrial Products Co., B. F., Koroseal Div., Marietta, O. (PVC)
Haveg Industries, Inc., Wilmington, Del.
Heil Process Equipment Corp., Cleveland, O.
Industrial Plastic Fabricators, Norwood, Mass. (PVC)
Kaykor Industries, Inc., Yardville, N. J.
LaFavorite Rubber Mfg. Co., Hawthorne, N. J.
Laminated Sheet Products Corp., Norwood, Mass.
Plastipipe, Products of Plastic Process Co., Div. of Monadnock Mills, Los Angeles, Calif.
Quelcor, Inc., Chester, Pa.
Resolite Corp., Zelienople, Pa.
Ryerson & Son, Inc., Joseph T., Chicago, Ill.
Seelye Craftsmen, The, Minneapolis, Minn.
Seiberling Rubber Co., Plastics Div., Newcomerstown, O.
Southern Plastics Co., Columbia, S. C.
United States Gasket Co., Camden, N. J. (teflon)
United States Rubber Co., New York, N. Y.

SHEETS, STEEL, COPPER BEARING

Acme Newport Steel Co., Newport, Ky.
Alan Wood Steel Co., Conshohocken, Pa.
Armco Steel Corp., Middletown, O.
Bethlehem Steel Co., Bethlehem, Pa.
Central Steel & Wire Co., Chicago, Ill.
Columbia-Geneva Steel Div., United States Steel Corp., San Francisco, Calif.
Granite City Steel Co., Granite City, Ill.
Great Western Steel Co., Chicago, Ill.
Inland Steel Co., Chicago, Ill.
Inland Steel Products Co., Milwaukee, Wis.
Lukens Steel Co. and Divisions, Coatesville, Pa.
Pittsburgh Steel Co., Pittsburgh, Pa.
Reeves Steel & Mfg. Co., Div. of Empire-Reeves Steel Corp., Dover, O.
Republic Steel Corp., Cleveland, O.
Rigidized Metals Corp., Buffalo, N. Y.
Sharon Steel Corp., Sharon, Pa.
Tennessee Coal & Iron Div., United States Steel Corp., Fairfield, Ala.
United States Steel Corp., Pittsburgh, Pa.
Weirton Steel Co., Weirton, W. Va.
Wheeling Steel Corp., Wheeling, W. Va.
Youngstown Sheet & Tube Co., Youngstown, O.

SHEETS, STEEL, GALVANIZED

Armco Steel Corp., Middletown, O.
Bethlehem Steel Co., Bethlehem, Pa.
Central Steel & Wire Co., Chicago, Ill.
Columbia-Geneva Steel Div., United States Steel Corp., San Francisco, Calif.
Granite City Steel Co., Granite City, Ill.
Great Western Steel Co., Chicago, Ill.
Inland Steel Co., Chicago, Ill.
Inland Steel Products Co., Milwaukee, Wis.
Jones & Laughlin Steel Corp., Pittsburgh, Pa.
Reeves Steel & Mfg. Co., Div. of Empire-Reeves Steel Corp., Dover, O.
Republic Steel Corp., Cleveland, O.
Rigidized Metals Corp., Buffalo, N. Y.
Ryerson & Son, Inc., Joseph T., Chicago, Ill.
Sharon Steel Corp., Sharon, Pa.
Tennessee Coal & Iron Div., United States Steel Corp., Fairfield, Ala.
United States Steel Corp., Pittsburgh, Pa.
Weirton Steel Co., Weirton, W. Va.
Wheeling Corrugating Co., Wheeling, W. Va.
Wheeling Steel Corp., Wheeling, W. Va.

SHEETS, STEEL, GALVANNEALED

American Agile Corp., Bedford, O. (sheets plastic)
Columbia-Geneva Steel Div., United States Steel Corp., San Francisco, Calif.
Great Western Steel Co., Chicago, Ill.
Republic Steel Corp., Cleveland, O.
Rigidized Metals Corp., Buffalo, N. Y.
Ryerson & Son, Inc., Joseph T., Chicago, Ill.
Sharon Steel Corp., Sharon, Pa.
United States Steel Corp., Pittsburgh, Pa.

SHEETS, STEEL, STAINLESS

Allegheny Ludlum Steel Corp., Pittsburgh, Pa.
Armco Steel Corp., Middletown, O.
Byers Co., A. M., Pittsburgh, Pa.
Carpenter Steel Co., Alloy Tube Div., Union, N. J.
Central Steel & Wire Co., Chicago, Ill.
Chase Brass & Copper Co., Waterbury, Conn.
Columbia-Geneva Steel Div., United States Steel Corp., San Francisco, Calif.
Crucible Steel Co. of America, Pittsburgh, Pa.
Eastern Stainless Steel Corp., Baltimore, Md.
Ingersoll Steel Div., Borg-Warner Corp., Chicago, Ill.
Jessop Steel Co., Washington, Pa.
Jones & Laughlin Steel Corp., Pittsburgh, Pa.
Jones & Laughlin Steel Corp., Stainless Steel Div., Detroit, Mich.
Republic Steel Corp., Cleveland, O.
Rigidized Metals Corp., Buffalo, N. Y.
Ryerson & Son, Inc., Joseph T., Chicago, Ill.
Sharon Steel Corp., Sharon, Pa.
Tennessee Coal & Iron Div., United States Steel Corp., Fairfield, Ala.
United States Steel Corp., Pittsburgh, Pa.
Washington Steel Corp., Washington, Pa.

SHEETS, WROUGHT IRON

Byers Co., A. M., Pittsburgh, Pa.

SHEETS, ZINC

American Zinc Products Div., Ball Brothers Co., Greencastle, Ind.
Belmont Smelting & Refining Wks., Inc., Brooklyn, N. Y.
Chase Brass & Copper Co., Waterbury, Conn.
Cheney Flashing Co., Trenton, N. J.
Division Lead Co., Summit, Ill.
Illinois Zinc Co., Div. of Hydrometals, Inc., Chicago, Ill.
Matthiessen & Hegeler Zinc Co., La Salle, Ill.
Rigidized Metals Corp., Buffalo, N. Y.

SHIELDS, CORROSION, FOR PIPE JOINTS

Atlas Mineral Products Co., Mertztown, Pa.

SHIELDS, VALVE BONNET

Industrial Products Co., Philadelphia, Pa.
Wilmington Plastics Co., Wilmington, Del.

SHOCK ABSORBERS, LIQUID

See Absorbers, Shock, Liquid

SHUTTERS

See Louvers and Shutters

SIGHT GLASSES

See Glasses, Sight, for Pipe Lines

SIGNALS, LIQUID LEVEL

See Alarms, Liquid Level

SIGNALS, TANK FILL

See Alarms, Liquid Level

SILENCERS, DUCT

See Absorbers, Sound, Duct Section, Prefabricated, for Noise Control in Duct Systems; Insulation, Duct, Sound Deadening

SILENCERS FOR REDUCING COMPRESSOR INTAKE NOISE

Air-Maze Corp., Cleveland, O.
Dollinger Corp., Rochester, N. Y.
General Sound Control, Inc., Los Angeles, Calif.

SIPHONS, STEAM GAGE

Chicago Nipple Mfg. Co., Oak Park, Ill.
Crane Co., Chicago, Ill.
Pittsburgh Nipple Works, Pittsburgh, Pa.
Trerice Co., H. O., Detroit, Mich.

SLEEVE BEARINGS

See Bearings, Sleeve

SLEEVES, PIPE REPAIR

See Clamps, Pipe Repair

SLIME AND ALGAE CONTROL, WATER TREATMENT FOR

See Treatment, Water, for Slime and Algae Control

SMOKE ALARMS

See Alarms, Smoke

SMOKE DETECTORS

See Indicators, Smoke; Alarms, Smoke

SMOKE ELIMINATORS

See Jets, Overfire Air, for Smoke Abatement

SMOKE GUNS

See Guns, Pots and Candles, Smoke and Smudge

SMOKE INDICATORS

See Indicators, Smoke

SMUDGE POTS

See Guns, Pots and Candles, Smoke and Smudge

SNOW MELTING ANTI-FREEZE

See Compounds, Anti-Freeze

SOFTENERS, WATER

American Water Softener Co., Philadelphia
American Well Works, Aurora, Ill.
Anderson-Stolz Corp., Kansas City, Mo.
Aquatrol Ferr-X Corp., Clifton, N. J.
Aquatrol Laboratories, Inc., Clifton, N. J.
Belco Industrial Equipment Div., Bogue Electric Mfg. Co., Paterson, N. J.
Bruner Corp., Milwaukee, Wis.
Clayton Mfg. Co., El Monte, Calif.
Cochrane Corp., Philadelphia, Pa.
Culligan, Inc., Norbrook, Ill.
Dearborn Chemical Co., Chicago, Ill.
Duro Co., Dayton, O.
Elgin Softener Corp., Elgin, Ill.
General Filter Co., Ames, Ia.
Graver Water Conditioning Co., New York.
Hungerford & Terry, Inc., Clayton, N. J.
Illinois Water Treatment Co., Rockford, Ill.
Kisco Boiler & Engineering Co., St. Louis, Mo.
Modern Div., George Getz Corp., Freeport, Ill.
Myers & Bro. Co., F. E., The, Ashland, O.
Norwood Associated Engineers Inc., Springfield, Mass.
Oakite Products, Inc., New York, N. Y.
Oshkosh Filter & Softener Co., Oshkosh, Wis.
Permutit Co., Div. of Pfaudler Permutit, Inc., New York, N. Y.
Radiant Utilities Corp., Brooklyn, N. Y.
Red Jacket Mfg. Co., Davenport, Ia.
Reynolds Water Conditioning Co., Detroit, Mich.
Sherwood Water Treatment Co., Inc., Beverly, N. J.
Smith Chemical Co., E. W., La Puente, Calif.
Stover Water Softener Co., St. Charles, Ill.
Uniflow Mfg. Co., Erie, Pa.

SOLAR HEAT REFLECTORS

See Canopies, Metal, Sun, Reflecting

SOLAR HEAT RESISTING LOUVERS AND SCREENS

See Louvers, Sun Reflecting; and Screens, Sun Reflecting

SOLAR SENSING INSTRUMENTS FOR HEATING AND AIR CONDITIONING

See Instruments, Solar Sensing, for Heating and Air Conditioning

SOLDER (SILVER), BRAZING ALLOYS, AND FLUXES

Aeroprojects, Inc., West Chester, Pa.
Air Reduction Sales Co., A Div. of Air Reduction Co., Inc., New York, N. Y.
All-State Welding Alloys Co., Inc., White Plains, N. Y.
Allen Co., Inc., L. B., Schiller Park, Ill.
Allied Weld-Craft, Inc., Indianapolis, Ind.
Alpha Metals, Inc., Jersey City, N. J.
American Platinum & Silver Div., Engelhard Industries, Inc., Newark, N. J.
American Silver Co., Flushing, N. Y.
Anchor Metal Co., Inc., Brooklyn, N. Y.
Belmont Smelting & Refining Works, Inc., Brooklyn, N. Y.
Central Steel & Wire Co., Chicago, Ill.
Chase Brass & Copper Co., Waterbury, Conn.
Chemical Specialty Div. of Shooz Polish Mfg. Co., Milwaukee, Wis.
Engelhard Industries, Inc., Newark, N. J.
Eutectic Welding Alloys Corp., Flushing, N. Y.
General Plate Div., Metals & Controls Corp., Attleboro, Mass.
Handy & Harman, New York, N. Y.
Hi-Grade Alloy Corp., Chicago, Ill.
Johnson Gas Appliance Co., Cedar Rapids, Ia.
Johnson Mfg. Co., Inc., Mt. Vernon, Ia.
Lake Chemical Co., Chicago, Ill.
Marquette Mfg. Co., Inc., Minneapolis, Minn.
Mir-O-Col Alloy Co., Inc., Los Angeles, Calif.
Mueller Brass Co., Port Huron, Mich.
National Cylinder Gas Div. of Chemetron Corp., Chicago, Ill.
O'Reilly Engineering Co., Dallas, Tex.
Oxygen Equipment & Service Co., Chicago.
Ruby Chemical Co., Columbus, O.
Soldering Specialties Co., Summit, N. J.
Special Chemicals Corp., Ossining, N. Y.
Stainless Processing Div., Wall Colmonoy Corp., Detroit, Mich.
United Wire & Supply Corp., Cranston, R. I.
Wabash Corp., Chicago, Ill.
Weldit, Inc., Detroit, Mich.

SOLDER (TIN-LEAD), AND FLUXES

Accurate Specialties Co., Inc., Long Island City, N. Y.
Aeroprojects, Inc., West Chester, Pa.
Allen Co., Inc., L. B., Schiller Park, Ill.
All-State Welding Alloys Co., Inc., White Plains, N. Y.
Alpha Metals, Inc., Jersey City, N. J.
American Sanitary Mfg. Co., Abingdon, Ill.
American Smelting & Refining Co., Federated Metals Div., New York, N. Y.
American Solder & Flux Co., Philadelphia, Pa.
Anchor Metal Co., Inc., Brooklyn, N. Y.
Belmont Smelting & Refining Works, Inc., Brooklyn, N. Y.
Benson Co., Inc., Alex R., New Hartford, N. Y.
Blue Seal Chemical Co., Roselle Park, N. J.
Bohn Aluminum & Brass Corp., Detroit, Mich.
Bunker Hill Co., The, Sales & Fabrication Div., Seattle, Wash.
Chase Brass & Copper Co., Waterbury, Conn.
Chemical Specialty Div. of Shooz Polish Mfg. Co., Milwaukee, Wis.
Division Lead Co., Summit, Ill.
du Pont de Nemours & Co., E. I., Grasselli Chemicals Dept., Wilmington, Del.
Eutectic Welding Alloys Corp., Flushing, N. Y.
Flemm Lead Co., Inc., Long Island City, N. Y.
Fluxolder Products Co., Detroit, Mich., (solder paints)
Gardiner Metal Co., Chicago, Ill.
Helmco, Inc., Chicago, Ill.
Hercules Chemical Co., Inc., New York, N. Y.
Hi-Grade Alloy Corp., Chicago, Ill.
Johnson Gas Appliance Co., Cedar Rapids, Ia.
Johnson Mfg. Co., Inc., Mt. Vernon, Ia.
Johnson Foil Mfg. Co., The, St. Louis, Mo
Kester Solder Co., Chicago, Ill.
Klauer Mfg. Co., Dubuque, Ia.
Lake Chemical Co., Chicago, Ill. (fluxes in paste, stik & liquid form)
Lenk Mfg. Co., Franklin, Ky.
London Chemical Co., Melrose Park, Ill.
Mill-Rose Co., Cleveland, O.
Mueller Brass Co., Port Huron, Mich.
National Lead Co., New York, N. Y.
Paul-Lewis Laboratories, Inc., Milwaukee, Wis.
Revere Copper & Brass, Inc., Foil Div., Brooklyn, N. Y.
Rochester Lead Works, Inc., Rochester, N. Y.
Rotometals, San Francisco, Calif.
Ruby Chemical Co., Columbus, O.
S. O. S. Products Co., Inc., Brooklyn, N. Y
Soldering Specialties Co., Summit, N. J.
Special Chemicals Corp., Ossining, N. Y.
Sulflo, Inc., Elizabeth, N. J.
Wolfe-Kote Co., Inc., Sheboygan, Wis.

SOLENOIDS AND SOLENOID COILS

A-P Controls Div., Controls Co. of America, Milwaukee, Wis.
Allen-Bradley Co., Milwaukee, Wis.
Allied Control Co., Inc., New York, N. Y.
Automatic Switch Co., Florham Park, N. J.
Controls Co. of America, Soreng Div., Schiller Park, Ill.
Cook Electric Co., Chicago, Ill.
Cutler-Hammer, Inc., Milwaukee, Wis.
Dole Valve Co., The, Morton Grove, Ill.
Dormeyer Industries, Chicago, Ill.
Essex Wire Corp., Ft. Wayne, Ind.
General Controls Co., Glendale, Calif. and Skokie, Ill.
General Electric Co., Apparatus Sales Div., Schenectady, N. Y.
Guardian Electric Mfg. Co., Chicago, Ill.
Hammett Electric Mfg. Co., Kansas City, Mo.
Hubbell Corp., Mundelein, Ill.
McDonnell & Miller, Inc., Chicago, Ill.
McQuay-Norris Mfg. Co., St. Louis, Mo.
Monitor Controller, Rockland, Mass.
National Acme Co., The, Cleveland, O.
Sporlan Valve Co., St. Louis, Mo.
Struthers-Dunn, Inc., Pitman, N. J.
Synchro-Start Products, Inc., Skokie, Ill.
Trombetta Solenoid Corp., Milwaukee, Wis
Watkins Co., J. E., Maywood, Ill.

SOLENOID VALVES

See Valves, Solenoid

SOLVENT, PENETRANT, FOR LOOSENING SCALE AND THREADED JOINTS

Cabot & Sons Co., Samuel, Boston, Mass.
Claronex Products, Inc., Brooklyn, N. Y.
Hercules Chemical Co., Inc., New York, N. Y.
Krylon, Inc., Norristown, Pa.
Permatex Co., Inc., Long Island, N. Y.
Petroleum Solvents Corp., New York, N. Y.
Radiator Specialty Co., Charlotte, N. C.
S. O. S. Products Co., Inc., Brooklyn, N. Y
Sealed Unit Parts Co., Inc., New York, N. Y.

SOOT BLOWERS

See Blowers, Soot

SOOT DESTROYERS

See Destroyers, Soot, Chemical

SOUND ABSORBERS

See Absorbers, Sound, Duct Section, Prefabricated, for Noise Control in Duct Systems; Insulation, Duct, Sound Deadening

SOUND ATTENUATOR BOXES

See Units, Mixing, Sound and Volume Control, for Double Duct High Velocity Air Conditioning Systems

SOUND CONTROL FOR COOLING TOWERS

See Noise Elimination for Cooling Towers

SOUND DEADENING FOR DUCTS

See Absorbers, Sound, Duct Section, Prefabricated, for Noise Control in Duct Systems; Insulation, Duct, Sound Deadening

SOUND INDICATORS

See Indicators, Sound Level

SOUND TESTERS FOR LOCATING MECHANICAL TROUBLES

See Testers, Sound

SOUND TRAPS

See Absorbers, Sound, Duct Section, Prefabricated, for Noise Control in Duct Systems

SPARGER NOZZLES

See Nozzles, Sparger, for Tank Heating

SPEED CHANGERS

See Changers, Speed, Hydraulic Coupling; Changers, Speed, Mechanical

SPEED REDUCERS

See Reducers, Speed

SPIRAL PIPE

See Pipe, Spiral Welded

SPIRAL PIPE FOR HIGH VELOCITY AIR SYSTEMS

See Ducts, Spiral Welded

SPOT WELDERS

See Welders, Spot

SPRAY HUMIDIFIERS

See Humidifiers, Direct, Spray Head

SPRAY NOZZLES

See Nozzles, Spray

SPRAY PAINTING BOOTHS

See Booths, Painting, Spray

SPRINKLER HEADS

See Heads, Sprinkler

SPRINKLER SYSTEM CONTROLS

See Controls, Fire Protection Sprinkler System; Valves, Fire Protection Sprinkler System Control

SPRINKLERS FOR FIRE PROTECTION

See Heads, Sprinkler

STACKS AND CHIMNEYS, INDUSTRIAL, PREFABRICATED

Acme Welding, Div. of the United Tool & Die Co., West Hartford, Conn.
American Pipe & Steel Corp., Alhambra, Calif.
Bigelow Co., The, New Haven, Conn.
Buffalo Tank Corp., Dunellen, N. J.
Chicago Metal Mfg. Co., Chicago, Ill.
Chicago Steel Tank Co., Div. of U.S. Industries, Inc., Chicago, Ill.
Condensation Engineering Corp., Chicago, Ill.
Dillon Steam Boiler Wks., Inc., D. M., Fitchburg, Mass.
Finnigan & Co., Inc., J. J., Atlanta, Ga.
General Products Co., Inc., Fredericksburg, Va.
Hodge Boiler Wks., East Boston, Mass.
Industrial Plastic Fabricators, Norwood, Mass. (PVC)
Kellogg Co., M. W., The, New York, N. Y.
Kirk & Blum Mfg. Co., Cincinnati, O.
Koven & Bro. Inc., L. O., Jersey City, N. J.
Leffel & Co., James, The, Springfield, O.
Lucey Boiler & Mfg. Corp., Chattanooga, Tenn.
Manitowoc Shipbuilding, Inc., Manitowoc, Wis.
McQuay, Inc., Minneapolis, Minn.
Prat-Daniel Corp., Thermobloc Div., South Norwalk, Conn.
Shutt Process Equipment Corp., St. Louis, Mo.
Smith Corp., A. O., Milwaukee, Wis.
Van-Packer Co., Div. of the Flintkote Co., Chicago Heights, Ill.

STAINLESS STEEL PIPE

See Pipe, Steel, Stainless

STAINLESS STEEL SHEETS

See Sheets, Steel, Stainless

STANDS, PIPE VISE

American Pipe Tool Co., Chicago, Ill.
Armstrong-Bridgeport Tool Mfg. Corp., Belleville, N. J.
Armstrong Bros. Tool Co., Chicago, Ill.
Erie Tool Wks., Erie, Pa.
International Forge Co., Chicago, Ill.
Leibfried Mfg. Corp., C. H., Brooklyn, N. Y.
Martin & Sons, H. P., Owensboro, Ky.
Nye Tool Co., Chicago, Ill.
Oster Mfg. Co., Wickliffe, O.
Reed Mfg. Co., Erie, Pa.
Ridge Tool Co., Elyria, O.
Talon Tools, Inc., North Arlington, N. J.
Toledo Pipe Threading Machine Co., Toledo, O.
Western Wire Products Co., St. Louis, Mo.
Williams & Co., J. H., Buffalo, N. Y

STANDS, TANK

Acme Steel Co., Chicago, Ill. (slotted angle)
Acme Welding, Div. of the United Tool & Die Co., West Hartford, Conn.
American Pipe & Steel Corp., Alhambra, Calif
Basic Engineers, Inc., Sharpsburg, Pa.
Leibfried Mfg. Corp., C. H., Brooklyn, N Y
Old Dominion Iron & Steel Corp., Richmond, Va.
Yuba Mfg. Div., Yuba Consolidated Industries Inc., Benicia, Calif.

STAPLES FOR FASTENING TUBING

See Hangers and Supports, Pipe

STARTERS, MOTOR

See Controllers and Starters, Motor

STEAM BOOSTER COMPRESSORS

See Compressors, Steam Booster

STEAM ENGINES

See Engines, Steam

STEAM GENERATORS

See Boilers

STEAM JET HEATERS

See Heaters, Steam Jet, for Liquids

STEAM JET REFRIGERATION

See Compressors, Refrigerating, Steam Jet

STEAM PRESSURE REGULATORS

See Valves, Pressure Reducing and Regulating

STEAM PUMPS

See Pumps, Steam

STEAM SEPARATORS

See Separators, Steam and Oil

STEAM TRAPS

See Traps, Steam

STEEL PIPE

See Pipe, Steel

STEEL TUBE FITTINGS, FLARED

See Fittings, Steel Tube, Flared

STEEL TUBING

See Tubing, Steel

STEEL UNIONS

See Unions, Steel

STEEL VALVES

See Valves, Gate; and Valves, Globe

STERILIZING LAMPS

See Lamps, Sterlizing, for Duct Installation

STERILIZING UNITS

See Units, Sterilizing, Air

STOCKS AND DIES

American Pipe Tool Co., Chicago, Ill.
Armstrong-Bridgeport Tool Mfg. Corp., Belleville, N. J.
Armstrong Bros. Tool Co., Chicago, Ill.
Beaver Pipe Tools, Inc., Warren, O.
Champion Blower & Forge Co., Lancaster, Pa.
Erie Tool Wks., Erie, Pa.
Greenfield Tap & Die Div. of United Greenfield Corp., Greenfield, Mass.
Mercury Hydraulics, Inc., Denver, Colo.
Nye Tool Co., Chicago, Ill.
Oster Mfg. Co., Wickliffe, O.
Reed Mfg. Co., Erie, Pa.
Ridge Tool Co., Elyria, O.
Saunders Mfg. Co., Yonkers, N. Y.
Thor Tool & Die Co., San Leandro, Calif.
Threadwell Tap & Die Co., Greenfield, Mass.
Toledo Pipe Threading Machine Co., Toledo, O.

STOKERS, INDUSTRIAL AND COMMERCIAL

61 *to* 1200 *Lb per Hr*

Allington & Curtis Mfg. Co., Saginaw, Mich. (For shavings, chips and sawdust)
American Coal Burner and Wood Stoker Corp., Chicago, Ill. (solid fuels combination system)
American Engineering Co., Philadelphia, Pa. (underfeed, spreader)
Anchor Div., Stratton & Terstegge Co., Inc., New Albany, Ind.
Auburn Burner Co., Auburn, Ind.
Auburn Foundry, Inc., Heating Div., Auburn, Ind.
Automatic Corp., St. Louis, Mo.
Automatic Solid Fuels Equipment Inc., Indianapolis, Ind.
Babcock & Wilcox Co., Boiler Div., New York, N. Y.
Bros. Inc., Minneapolis, Minn.
Canton Stoker Corp., Canton, O.
Carnes, Inc., John R., Lima, O.
Carpenter Heating & Air Conditioning Co., Cleveland, O.
Combustion Engineering, Inc., New York, N. Y.
Dayton Automatic Stoker Co., Dayton, O.
Detroit Stoker Co., Monroe, Mich. (3000 lb coal per hr to 400,000 lb steam per hr)
Electric Furnace-Man, Inc., Emmaus, Pa. (wet grate)
Erie City Iron Works, Erie, Pa.
Flynn & Emrich Co., Baltimore, Md.
Frederick Iron & Steel Inc., Frederick, Md.
Freeman Heating Div., Illinois Iron & Bolt Co., Carpentersville, Ill.
Gross-Aire Mfg. Co., Overland, Mo.
Heating Assurance, Inc., Spokane, Wash.
Hershey Motorstoker, Manheim, Pa. (repair parts for all motorstokers)
Hoffman Combustion Engrg. Co., Lincoln Park, Mich. (spreader type; 10,000 to 500,000 lb per hr)
Iron Fireman Mfg. Co., Cleveland, O. (underfeed)
Johnston & Jennings Co., Cleveland, O. (chain grate)
Kol-Master Corp., Oregon, Ill.
Laclede Stoker Co., St. Louis, Mo. (chain grate, spreader) (over 1200 lb per hr)
Leffel & Co., James, Springfield, O.
Meyer Furnace Co., The, Peoria, Ill.
Ormsby-Osterman, Inc., St. Louis, Mo.
Riley Stoker Corp., Worcester, Mass.
Stewart-Warner Corp., Heating & Air Conditioning Div., Lebanon, Ind.
Sun-Fire Stoker Corp., New Albany, Ind. (Hopper and bin feed)
V. & E. Products, Inc., Schuylkill Haven, Pa.
Westinghouse Electric Corp., Pittsburgh, Pa.
Whiting Fire Power Products Corp., Superior, Wis.
Whitty Co., Inc., Boston, Mass. (Bituminous)
Will-Burt Co., The, Orrville, O.

STONEWARE PIPE

See Pipe, Stoneware

STORAGE WATER HEATERS

See Heaters, Water, Steam, Storage

STRAINERS, PIPE LINE

Adsco Div., Yuba Consolidated Industries, Inc., Buffalo, N. Y.
Airaterra (Roylyn Products), Glendale, Calif.
Air-Maze Corp., Cleveland, O.
Alco Valve Co., St. Louis, Mo.
American Air Filter Co., Inc., Louisville, Ky.
Andale Co., Philadelphia, Pa.
Anderson Co., V. D., The, Div. of International Basic Economy Corp., Cleveland, O.
Armstrong Machine Wks., Three Rivers, Mich.
Automatic Switch Co., Florham Park, N. J.
Bailey Co., Chas. M., San Francisco, Calif.
Barnes & Jones, Inc., Newtonville, Mass. (steam and water only)
Barrett Haentjens & Co., Hazleton, Pa.
Blackmer Pump Co., Grand Rapids, Mich.
Boylston Steam Specialty Co., Chicago, Ill
Cash Co., A. W., Decatur, Ill.
Cash Valve Mfg. Corp., A. W., Decatur, Ill.
Cashin Co., W. D., Boston, Mass.
Clark Mfg. Co., Cleveland, O.
Clayton Mark & Co., Evanston, Ill.
Coen Co., San Francisco, Calif.
Cooper Alloy Corp., Hillside, N. J.
Corning Glass Works, Corning, N. Y.
Crane Co., Chicago, Ill.
Cuno Engineering Corp., Meriden, Conn.
Davis Regulator Co., Chicago, Ill.
d'Este Div., Kaye & MacDonald, Inc., West Orange, N. J.
Detroit Controls Div., American-Standard, Stratford, Conn.
DeZurik Corp., Sartell, Minn.
Eddington Metal Specialty Co., Eddington, Pa.
Edward Valves, Inc., East Chicago, Ind.
Elliott Co., Jeannette, Pa.
Fisher Governor Co., Marshalltown, Ia.
Foster Engineering Co., Union, N. J.
General Ceramics Corp., Keasbey, N. J. (ceramic)
General Controls Co., Glendale, Calif. and Skokie, Ill.
Golden-Anderson Valve Specialty Co., Pittsburgh, Pa.
Granberg Corp., Oakland, Calif.
Hauck Mfg. Co., Brooklyn, N. Y.
Hays Mfg. Co., Erie, Pa.
Henry Valve Co., Melrose Park, Ill.
Hetherington & Berner, Inc., Indianapolis, Ind. (jacketed)
Hoffman Specialty Mfg. Corp., Indianapolis, Ind.
Hubbell Corp., Mundelein, Ill.
Illinois Engineering Products, American Air Filter Co., Inc., Louisville, Ky.
Jordan Corp., Div. of OPW Corp., Cincinnati, O.
Kaye & McDonald, Inc., West Orange, N. J.
Keckley Co., O. C., Skokie, Ill.
Kieley & Mueller, Inc., Middletown, N. Y.
Kinney Mfg. Div., The New York Air Brake Co., Boston, Mass.
Kraissl Co., Inc., The, Hackensack, N. J.
Ladish Co., Cudahy, Wis.
Leslie Co., Lyndhurst, N. J.
Maid-O'-Mist, Inc., Chicago, Ill.
Marsh Heating Equipment Co., Skokie, Ill.
Mason-Neilan, Div. of Worthington Corp., Norwood, Mass.
McAlear Mfg. Co., Chicago, Ill.
McDonald Mfg. Co., A. Y., Dubuque, Ia.
Monarch Mfg. Wks., Inc., Philadelphia, Pa.
Morrison Brothers Co., Dubuque, Ia.
Mueller Co., Decatur, Ill.
Mueller Brass Co., Port Huron, Mich.
Mueller Steam Specialty Co., Inc., Brooklyn, N. Y.
Newark Wire Cloth Co., Newark, N. J.
Nicholson & Co., W. H., Wilkes-Barre, Pa.
OPW Corp., Cincinnati, O.
Perfecting Service Co., Charlotte, N. C.
Phillips & Co., H. A., Chicago, Ill.
Pittsfield Products, Inc., Ann Arbor, Mich. (wire cloth)
Plant Engineering & Equipment Co., Elizabeth, N. J.
Preferred Utilities Mfg. Corp., New York, N. Y.
Reliable Products Mfg. Co., Inc., Brooklyn, N. Y.
Rockwood Sprinkler Co., Worcester, Mass.
Ronningen-Petter Co., Vicksburg, Mich.
Ruggles-Klingemann Mfg. Co., Boston, Mass
Sarco Co., Inc., New York, N. Y.
Sarcotherm Controls, Inc., New York, N. Y.
Schade Valve Mfg. Co., Philadelphia, Pa.
Schutte and Koerting Co., Cornwells Heights, Bucks County, Pa.
Scientific Instrument Co., Detroit, Mich.

Self Cleaning Strainer Co., Oak Lawn, Ill.
Spence Engineering Co., Inc., Walden, N. Y.
Spray Engineering Co., Burlington, Mass.
Spraying Systems Co., Bellwood, Ill.
Standard Machine & Mfg. Co., St. Louis, Mo.
Staples & Pfeiffer, San Francisco, Calif.
Steinen Mfg. Co., Wm., Newark, N. J.
Sterling, Inc., Milwaukee, Wis.
Strong, Carlisle & Hammond, Cleveland, O.
Trane Co., The, LaCrosse, Wis.
Trerice Co., H. O., Detroit, Mich.
Tryco Products, Inc. Westfield, Mass.
Velan Valve Corp., Plattsburgh, N. Y.
Warren Engineering Co., Broadway, N. J.
Water Cooling Corp., New York, N. Y.
Watson & McDaniel Co., Philadelphia, Pa.
Watts Regulator Co., Lawrence, Mass.
Webster & Co., Warren, Camden, N. J.
Wright-Austin Co., Detroit, Mich.
Yarnall-Waring Co., Philadelphia, Pa.
Zurn Industries, Inc., Erie, Pa.

STRAINERS, REFRIGERANT, LIQUID LINE

A-P Controls Div., Controls Co. of America, Milwaukee, Wis.
Alco Valve Co., St. Louis, Mo.
Dersch, Gesswein & Neuert, Inc., Chicago, Ill.
General Controls Co., Glendale, Calif.
Henry Valve Co., Melrose Park, Ill.
Hubbell Corp., Mundelein, Ill.
Imperial Brass Mfg. Co., Chicago, Ill.
Kenmore Machine Products, Inc., Lyons, N. Y.
Kerotest Mfg. Co., Pittsburgh, Pa.
Ladish Co., Cudahy, Wis.
Madden Brass Products Co., Aurora, Ill.
McIntire Co., The, Livingston, N. J.
Mueller Brass Co., Port Huron, Mich.
Newark Wire Cloth Co., Newark, N. J.
Pittsfield Products, Inc., Ann Arbor, Mich. (wire cloth)
Refrigerating Specialties Co., Chicago, Ill.
Refrigeration Research, Inc., Brighton, Mich.
Ronningen-Petter Co., Vicksburg, Mich.
Sealed Unit Parts Co., Inc., New York, N. Y.
Self Cleaning Strainer Co., Oak Lawn, Ill.
Sporlan Valve Co., St. Louis, Mo.
Standard Machine & Mfg. Co., St. Louis, Mo.
Superior Valve & Fittings Co., Pittsburgh, Pa.
Velan Valve Corp., Plattsburgh, N. Y.
Wabash Corp., Chicago, Ill.
Zurn Industries, Inc., Erie, Pa.

STRAINERS, SUCTION, FOR AIR WASHERS

Bahnson Co., Winston-Salem, N. C.
Eddington Metal Specialty Co., Eddington, Pa.
Keckley Co., O. C., Skokie, Ill.
Kraissl Co., Inc., The, Hackensack, N. J.
Milwaukee Valve Co., Milwaukee, Wis.
Newark Wire Cloth Co., Newark, N. J.
Ronningen-Petter Co., Vicksburg, Mich.
Staples & Pfeiffer, San Francisco, Calif.
Water Cooling Corp., New York, N. Y.
Zurn Industries, Inc., Erie, Pa.

STRESS RELIEVERS

See Preheaters and Stress Relievers, Electric, for Pipe Welds

STRIP HEATERS

See Heaters, Strip and Immersion, Electric

STRUCTURAL SHAPES

See Angles, Bars, Beams, Channels and Tees

STUD DRIVERS

See Fasteners, Powder Operated

STUD WELDERS

See Welders, Stud

SUCTION LINE HEAT EXCHANGERS

See Exchangers, Heat, Refrigerant Suction Line

SUMP PUMPS

See Pumps, Sump

SUPERHEATERS, PROCESS STEAM

Alstrom Corp., New York, N. Y.
Babcock & Wilcox Co., Boiler Div., New York, N. Y.
Bell & Gossett Co., Morton Grove, Ill.
Bros Inc., Minneapolis, Minn.
Combustion Engineering, Inc., New York, N. Y.
Condenser Service & Engineering Co., Inc., Hoboken, N. J.
Electro-Therm, Inc., Silver Spring, Md.
Erie City Iron Works, Erie, Pa.
Foster Wheeler Corp., New York, N. Y.
Murray Iron Wks. Co., Burlington, Ia.
Pantex Mfg. Corp., Pawtucket, R. I.
Springfield Boiler Co., Springfield, Ill.
Tranter Mfg. Inc., Lansing, Mich.
Union Iron Works, Erie, Pa.
Wiegand Co., Edwin L., Pittsburgh, Pa.

SURFACE, FINNED, COOLING, BRINE

Aerofin Corp., Syracuse, N. Y.
Alco Products, Inc., Schenectady, N. Y.
American Blower Div. of American-Standard, Detroit, Mich.
Anderson-Snow Corp., Chicago, Ill.
Blazer & Son, M., Passaic, N. J.
Drayer-Hanson, Div. of National U. S. Radiator Corp., Los Angeles, Calif.
Dunham-Bush, Inc., West Hartford, Conn.
Edwards Engineering Corp., Pompton Plains, N. J.
G. & O. Mfg. Co., New Haven, Conn.
Griscom-Russell Co., The, Massillon, O.
Heat-Exchangers, Inc., Chicago, Ill.
Heatron, Inc., York, Pa.
Howe Ice Machine Co., Chicago, Ill.
Imeco, Inc., Chicago, Ill.
Kramer Trenton Co., Trenton, N. J.
Larkin Coils, Inc., Atlanta, Ga.
Marlo Coil Co., St. Louis, Mo.
McCord Corp., Detroit, Mich.
McQuay, Inc., Minneapolis, Minn.
Modine Mfg. Co., Racine, Wis.
Niagara Blower Co., New York, N. Y.
Peerless of America, Inc., Chicago, Ill.
Recold Corp., Los Angeles, Calif.
Recoy Div. of Schemenauer Mfg. Corp., Holland, O.
Refrigeration Appliances, Inc., Chicago, Ill.
Rempe Co., Chicago, Ill.
Rigidbilt Inc., Chicago, Ill.
Schutte and Koerting Co., Cornwells Heights, Bucks County, Pa.
Super Radiator Corp., Minneapolis, Minn.
Temtrol, Inc., Okarche, Okla.
Tenney Engineering, Inc., Union, N. J.
Trane Co., The, LaCrosse, Wis.
Vilter Mfg. Co., Milwaukee, Wis.
Wolverine Tube, Div. of Calumet and Hecla, Inc., Allen Park, Mich.
X L Refrigerating Co., Chicago, Ill.
York Corp., Subsidiary of Borg-Warner Corp., York, Pa.
Young Radiator Co., Racine, Wis.

SURFACE, FINNED, COOLING, COLD WATER

Aerofin Corp., Syracuse, N. Y.
Alco Products, Inc., Schenectady, N. Y.
American Blower Div. of American-Standard, Detroit, Mich.
Anderson-Snow Corp., Chicago, Ill.
Blazer & Son, M., Passaic, N. J.
Bohn Aluminum & Brass Corp., Betz Div., Danville, Ill.
Chrysler Airtemp, Div. of Chrysler Corp., Dayton, O.
Devine Mfg. Co., Inc., J. P., Pittsburgh, Pa.
Drayer-Hanson, Div. of National-U. S. Radiator Corp., Los Angeles, Calif.
Dunham-Bush, Inc., West Hartford, Conn.
Edwards Engineering Corp., Pompton Plains, N. J.
G & O Mfg. Co., New Haven, Conn.
Governair Corp., Oklahoma City, Okla.
Griscom-Russell Co., The, Massillon, O.
Halstead & Mitchell, Pittsburgh, Pa.
Hastings Air Control, Inc., Omaha, Nebr.
Heat-Exchangers, Inc., Chicago, Ill.
Heatron, Inc., York, Pa.
Howe Ice Machine Co., Chicago, Ill.
Imeco, Inc., Chicago, Ill.
Kennard Products, American Air Filter Co., Inc., Louisville, Ky.
Kramer Trenton Co., Trenton, N. J.
Larkin Coils, Inc., Atlanta, Ga.
Magic Aire Div., United Electric Co., Wichita Falls, Tex.
Marlo Coil Co., St. Louis, Mo.
McCord Corp., Detroit, Mich.
McQuay, Inc., Minneapolis, Minn.
Modine Mfg. Co., Racine, Wis.
National-U.S. Radiator Corp., Johnstown, Pa.
Nesbitt, Inc., John J., Philadelphia, Pa.
New York Blower Co., Chicago, Ill.
Niagara Blower Co., New York, N. Y.
Peerless of America, Inc., Chicago, Ill.
Recold Corp., Los Angeles, Calif.
Recoy Div. of Schemenauer Mfg. Corp., Holland, O.
Refrigeration Appliances, Inc., Chicago, Ill.
Rempe Co., Chicago, Ill.
Rigidbilt Inc., Chicago, Ill.
Rittling Corp., The, Buffalo, N. Y.
Rome-Turney Radiator Co., Rome, N. Y.
Schutte and Koerting Co., Cornwells Heights, Bucks County, Pa.
Super Radiator Corp., Minneapolis, Minn.
Temtrol, Inc., Okarche, Okla.
Tenney Engineering, Inc., Union, N. J.
Thermal Engineering Corp., Houston, Tex.
Trane Co., The, LaCrosse, Wis.
Tubenfin Coil Co., Houston, Tex.
United States Air Conditioning Corp., Delaware, O.
Vilter Mfg. Co., Milwaukee, Wis.
Westinghouse Electric Corp., Sturtevant Div., Boston, Mass.
Wing Mfg. Co., L. J., Div. of Aero Supply Mfg. Co., Inc., Linden, N. J.
Witt Co., A. H., Los Angeles, Calif.
Wolverine Tube, Div. of Calumet & Hecla, Inc., Allen Park, Mich.
X L Refrigerating Co., Chicago, Ill.
York Corp., Subsidiary of Borg-Warner Corp., York, Pa.
Young Radiator Co., Racine, Wis.

SURFACE, FINNED, COOLING, DIRECT EXPANSION

Aerofin Corp., Syracuse, N. Y.
Alco Products, Inc., Schenectady, N. Y.
American Blower Div. of American-Standard, Detroit, Mich.
Anderson-Snow Corp., Chicago, Ill.
Baker Mfg. Co., Wichita Falls, Tex.
Blazer & Son, M., Passaic, N. J.
Bohn Aluminum & Brass Corp., Detroit, Mich.
Bohn Aluminum & Brass Corp., Betz Div., Danville, Ill.
Chrysler Airtemp, Div. of Chrysler Corp., Dayton, O.
Drayer-Hanson, Div. of National-U. S. Radiator Corp., Los Angeles, Calif.
Dunham-Bush, Inc., West Hartford, Conn.
Edwards Engineering Corp., Pompton Plains, N. J.
Fedders-Quigan Corp., Buffalo, N. Y.
G & O Mfg. Co., New Haven, Conn.
Governair Corp., Oklahoma City, Okla.
Griscom-Russell Co., The, Massillon, O.
Halstead & Mitchell, Pittsburgh, Pa.
Hastings Air Control, Inc., Omaha, Nebr.
Heat-Exchangers, Inc., Chicago, Ill.
Heat-X, Inc., Subsidiary of Dunham-Bush, Inc., West Hartford, Conn.
Heatron, Inc., York, Pa.
Howe Ice Machine Co., Chicago, Ill.
Imeco, Inc., Chicago, Ill.
Kennard Products, American Air Filter Co., Inc., Louisville, Ky.
Kirsch Co., Refrigeration Div., Sturgis, Mich.
Kramer Trenton Co., Trenton, N. J.
Larkin Coils, Inc., Atlanta, Ga.
Magic Aire Div., United Electric Co., Wichita Falls, Tex.
Marlo Coil Co., St. Louis, Mo.
McCord Corp., Detroit, Mich.
McQuay, Inc., Minneapolis, Minn.
Modine Mfg. Co., Racine, Wis.
National-U. S. Radiator Corp., Johnstown, Pa.
Niagara Blower Co., New York, N. Y.
Peerless of America, Inc., Chicago, Ill.
Recold Corp., Los Angeles, Calif.
Recoy Div. of Schemenauer Mfg. Corp., Holland, O.
Refrigeration Appliances, Inc., Chicago, Ill.
Rempe Co., Chicago, Ill.
Rigidbilt Inc., Chicago, Ill.
Rome-Turney Radiator Co., Rome, N. Y.
Schutte and Koerting Co., Cornwells Heights, Bucks County, Pa.
Super Radiator Corp., Minneapolis, Minn.
Temtrol, Inc., Okarche, Okla.
Tenney Engineering, Inc., Union, N. J.
Thermal Engineering Corp., Houston, Tex.
Trane Co., The, LaCrosse, Wis.
Tranter Mfg. Inc., Lansing, Mich.

Tubenfin Coil Co., Houston, Tex.
Typhoon Air Conditioning Co., Div. of Hupp Corp., Brooklyn, N. Y.
United States Air Conditioning Corp., Delaware, O.
Vilter Mfg. Co., Milwaukee, Wis.
Watkins Co., J. E., Maywood, Ill.
Westinghouse Electric Corp., Sturtevant Div., Boston, Mass.
Witt Co., A. H., Los Angeles, Calif.
Wolverine Tube, Div. of Calumet & Hecla, Inc., Allen Park, Mich.
X L Refrigerating Co., Chicago, Ill.
York Corp., Subsidiary of Borg-Warner Corp., York, Pa.
Young Radiator Co., Racine, Wis.

SURFACE, FINNED, ELECTRIC HEATING ELEMENT

Blazer & Son, M., Passaic, N. J.
Marlo Coil Co., St. Louis, Mo.
Roberson, Inc., Seattle, Wash.
Wiegand Co., E. L., Pittsburgh, Pa.

SURFACE, FINNED, HEATING AND COOLING, PRE-ASSEMBLED, INCLUDING COILS, ELIMINATOR PLATES, SETTLING TANK, AND CASING

Blazer & Son, M., Passaic, N. J.
Clarage Fan Co., Kalamazoo, Mich.
Embassy Steel Products, Inc., Brooklyn, N. Y.
Marlo Coil Co., St. Louis, Mo.
Modine Mfg. Co., Racine, Wis.
National-U.S. Radiator Corp., Johnstown, Pa.
Niagara Blower Co., New York, N. Y.
Recoy Div. of Schemenauer Mfg. Corp., Holland, O.
Rome-Turney Radiator Co., Rome, N. Y.
Temtrol, Inc., Okarche, Okla.
Trane Co., The, LaCrosse, Wis.
Typhoon Air Conditioning Co., Div. of Hupp Corp., Brooklyn, N. Y.

SURFACE, FINNED, HEATING, INDIRECT, FERROUS

Anderson-Snow Corp., Chicago, Ill.
Bayley Blower Co., Milwaukee, Wis.
Drayer-Hanson, Div. of National-U. S. Radiator Corp., Los Angeles, Calif.
Dunham-Bush, Inc., West Hartford, Conn.
Edwards Engineering Corp., Pompton Plains, N. J.
Embassy Steel Products, Inc., Brooklyn, N. Y.
Fedders-Quigan Corp., Heating Div., Trenton, N. J.
Griscom-Russell Co., The, Massillon, O.
Imeco, Inc., Chicago, Ill.
Kritzer Radiant Coils, Inc., Batavia, Ill.
Marlo Coil Co., St. Louis, Mo.
McCord Corp., Detroit, Mich.
Modine Mfg. Co., Racine, Wis.
Moore Dry Kiln Co., Jacksonville, Fla.
Murray Mfg. Co., D. J., Wausau, Wis.
National-U. S. Radiator Corp., Johnstown.
New York Blower Co., Chicago, Ill.
Recold Corp., Los Angeles, Calif.
Rempe Co., Chicago, Ill.
Rigidbilt Inc., Chicago, Ill.
Rittling Corp., The, Buffalo, N. Y.
Rome-Turney Radiator Co., Rome, N. Y.
Schutte and Koerting Co., Cornwells Heights, Bucks County, Pa.
Tenney Engineering, Inc., Union, N. J.
Trane Co., The, LaCrosse, Wis.
Vulcan Radiator Co., Hartford, Conn.
Webster & Co., Warren, Camden, N. J.
Westinghouse Electric Corp., Sturtevant Div., Boston, Mass.

SURFACE, FINNED, HEATING, INDIRECT, NON-FERROUS

Aerofin Corp., Syracuse, N. Y.
American Blower Div. of American-Standard, Detroit, Mich.
Anderson-Snow Corp., Chicago, Ill.
Bayley Blower Co., Milwaukee, Wis.
Blazer & Son, M., Passaic, N. J.
Bohn Aluminum & Brass Corp., Betz Div., Danville, Ill.
Drayer-Hanson, Div. of National-U. S. Radiator Corp., Los Angeles, Calif.
Dunham-Bush, Inc., West Hartford, Conn.
Edwards Engineering Corp., Pompton Plains, N. J.
Embassy Steel Products, Inc., Brooklyn, N. Y.
Fedders-Quigan Corp., Heating Div., Trenton, N. J.
G & O Mfg. Co., New Haven, Conn.
Governair Corp., Oklahoma City, Okla.
Griscom-Russell Co., The, Massillon, O.
Halstead & Mitchell, Pittsburgh, Pa.
Hastings Air Control, Inc., Omaha, Neb.
Heat-Exchangers, Inc., Chicago, Ill.
Heat-X, Inc., Subsidiary of Dunham-Bush, Inc., West Hartford, Conn.
Hoff Mfg. Co., Bethany, New Haven, Conn.
Imeco, Inc., Chicago, Ill.
Kennard Products, American Air Filter Co., Inc., Louisville, Ky.
Kramer Trenton Co., Trenton, N. J.
Kritzer Radiant Coils, Inc., Batavia, Ill.
Lewis & Saunders, Lakeport, N. H.
Marlo Coil Co., St. Louis, Mo.
McQuay, Inc., Minneapolis, Minn.
Modine Mfg. Co., Racine, Wis.
Nesbitt, Inc., John J., Philadelphia, Pa.
Recold Corp., Los Angeles, Calif.
Recoy Div. of Schemenauer Mfg. Corp., Holland, O.
Refrigeration Appliances, Inc., Chicago, Ill.
Rigidbilt Inc., Chicago, Ill.
Rittling Corp., The, Buffalo, N. Y.
Rome-Turney Radiator Co., Rome, N. Y.
Schutte and Koerting Co., Cornwells Heights, Bucks County, Pa.
Super Radiator Corp., Minneapolis, Minn.
Temtrol, Inc., Okarche, Okla.
Tenney Engineering, Inc., Union, N. J.
Thermal Engineering Corp., Houston, Tex.
Trane Co., The, LaCrosse, Wis.
Tubenfin Coil Co., Houston, Tex.
United States Air Conditioning Corp., Delaware, O.
Vulcan Radiator Co., Hartford, Conn.
Webster & Co., Warren, Camden, N. J.
Westinghouse Electric Corp., Sturtevant Div., Boston, Mass.
Wing Mfg. Co., L. J., Div. of Aero Supply Mfg. Co., Inc., Linden, N. J.
Witt Co., A. H., Los Angeles, Calif.
Wolverine Tube, Div. of Calumet & Hecla, Inc., Allen Park, Mich.
York Corp., Subsidiary of Borg-Warner Corp., York, Pa.
Young Radiator Co., Racine, Wis.

SURFACE THERMOSTATS

See Thermostats, Surface

SUSPENDED FURNACES

See Heaters, Air

SWING JOINTS

See Joints, Pipe, Flexible Swing and Revolving

SWITCHES, ELECTRICAL

Acro Div., Robertshaw-Fulton Controls Co., Columbus, O.
Adam Electric Co., Frank, St. Louis, Mo.
Allen-Bradley Co., Milwaukee, Wis.
Allied Control Co., Inc., New York, N. Y.
Arrow-Hart & Hegeman Elect. Co., Hartford, Conn.
Automatic Switch Co., Florham Park, N. J.
Barber-Colman Co., Rockford, Ill.
Better Engineered Controls, Los Angeles, Calif.
Circuit Protective Devices Dept., General Electric Co., Plainville, Conn.
Clark Controller Co., Cleveland, O.
Cutler-Hammer, Inc., Milwaukee, Wis.
Defender Instrument & Regulator Co., Boody, Ill.
Ebert Electronics Corp., Queens Village, N. Y.
Electric Controller & Mfg. Co., Div. of Square D Co., Cleveland, O.
Essex Wire Corp., Ft. Wayne, Ind.
Furnas Electric Co., Batavia, Ill.
General Controls Co., Glendale, Calif. and Skokie, Ill.
General Electric Co., Apparatus Sales Div., Schenectady, N. Y.
General Electric Co., Appliance Control Dept., Morrison, Ill.
General Electric Co., Construction Materials Div., Bridgeport, Conn.
General Electric Co., Wiring Device Dept., Providence, R. I.
Goodwill Mfg. Co., Chicago, Ill.
Guardian Electric Mfg. Co., Chicago, Ill.
H-B Instrument Co., Philadelphia, Pa.
Hammett Electric Mfg. Co., Kansas City, Mo.
Hart Mfg. Co., Hartford, Conn.
Haydon Co., A. W., Waterbury, Conn.
Heinemann Electric Co., Trenton, N. J.
Kulka Electric Corp., Mt. Vernon, N. Y.
Line Material Industries, McGraw-Edison Co., Milwaukee, Wis.
Mallory & Co., Inc., P. R., Indianapolis, Ind.
McDonnell & Miller, Inc., Chicago, Ill.
Mercoid Corp., Chicago, Ill.
Micro Switch Div. of Minneapolis-Honeywell Regulator Co., Freeport, Ill.
Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.
Monitor Controller, Rockland, Mass.
Morse-Smith-Morse, Inc., Watertown, Mass.
National Acme Co., The, Cleveland, O.
Parish Co., New Orleans, La.
Penn Controls, Inc., Goshen, Ind.
Pyle-National Co., The, Chicago, Ill.
Reynolds Electric Co., River Grove, Ill.
Sarcotherm Controls, Inc., New York, N. Y.
Scaico Controls Inc., Delanco, N. J.
Spencer Thermostat Div., Metals & Controls Corp., Attleboro, Mass. (precision)
Square D Co., Detroit, Mich.
Square D Co., Industrial Controller Div., Milwaukee, Wis.
Struthers-Dunn, Inc., Pitman, N. J.
Tuttle Electric Products, Inc., Kirkland, Ill.
Unimax Switch Div., W. L. Maxson Corp., Wallingford, Conn.
United Electric Controls Co., Watertown, Mass.
Westinghouse Electric Corp., Pittsburgh, Pa.
White-Rodgers Co., St. Louis, Mo.
Wiegand Co., Edwin L., Pittsburgh, Pa.
Wilson Industries, Inc., Brooklyn, N. Y. (for shutting off gas burner when spillage of combustion products occurs)
Wind-Way Fan & Ventilator Co., New Orleans, La. (fire fuse)
Zenith Electric Co., Chicago, Ill.

SWITCHES, FLOAT, REFRIGERATION

Alco Valve Co., St. Louis, Mo.
Allen-Bradley Co., Milwaukee, Wis.
Arrow-Hart & Hegeman Elect. Co., Hartford, Conn.
Clark Controller Co., Cleveland, O.
Controls Co. of America, Soreng Div., Schiller Park, Ill.
Defender Instrument & Regulator Co., Boody, Ill.
Frick Co., Waynesboro, Pa.
Magnetrol, Inc., Chicago, Ill.
Mercoid Corp., The, Chicago, Ill.
Square D Co., Industrial Controller Div., Milwaukee, Wis.

SWITCHES, FLOW

Barton Instrument Corp., Monterey Park, Calif.
Cook Electric Co., Chicago, Ill.
Dietz Co., Henry G., Long Island City, N. Y.
Drying Systems Co., Chicago, Ill. (air)
Eclipse Fuel Engineering Co., Rockford, Ill.
Fischer & Porter Co., Hatboro, Pa.
General Controls Co., Glendale, Calif. and Skokie, Ill.
Hays Mfg. Co., Erie, Pa.
Instruments, Inc., Tulsa, Okla.
Magnetrol Inc., Chicago, Ill.
McDonnell & Miller, Inc., Chicago, Ill.
Meriam Instrument Co., The, Cleveland, O.
Penn Controls, Inc., Goshen, Ind.
Penn Instruments Div. of Burgess-Manning Co., Philadelphia, Pa.

SWITCHES, LIQUID LEVEL

Acro Div., Robertshaw-Fulton Controls Co., Columbus, O.
Alco Valve Co., St. Louis, Mo.
Allen-Bradley Co., Milwaukee, Wis.
Arrow-Hart & Hegeman Elect. Co., Hartford, Conn.
Automatic Control Co., St. Paul, Minn.
Barton Instrument Corp., Monterey Park, Calif.
Ciesell Mfg. Co., Inc., W. M., Louisville, Ky.
Clark Controller Co., Cleveland, O.
Controls Co. of America, Soreng Div., Schiller Park, Ill.
Cook Electric Co., Chicago, Ill.
Cutler-Hammer, Inc., Milwaukee, Wis.
Defender Instrument & Regulator Co., Boody, Ill.

Detroit Controls Div. of American-Standard, Detroit, Mich.
Dietz Co., Henry G., Long Island City, N. Y.
Electronics Corp. of America, Cambridge, Mass.
Fischer & Porter Co., Hatboro, Pa.
Furnas Electric Co., Batavia, Ill.
General Controls Co., Glendale, Calif. and Skokie, Ill.
General Electric Co., Apparatus Sales Div., Schenectady, N. Y.
Hays Mfg. Co., Erie, Pa.
Healy Ruff Co., St. Paul, Minn.
Instrument Div., Robertshaw-Fulton Controls Co., Philadelphia, Pa.
Instruments, Inc., Tulsa, Okla.
Kenco Pump Div., American Crucible Products Co., Lorain, O.
Kisco Boiler & Engineering Co., St. Louis, Mo.
Magnetrol Inc., Chicago, Ill.
McDonnell & Miller, Inc., Chicago, Ill.
Mercoid Corp., Chicago, Ill.
Meriam Instrument Co., The, Cleveland, O.
Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.
Minneapolis-Honeywell Regulator Co., Industrial Div., Philadelphia, Pa.
Newark Controls Co., Bloomfield, N. J.
Norwood Controls, A Unit of Detroit Controls, Norwood, Mass.
Penn Controls, Inc., Goshen, Ind.
Petrometer Corp., Long Island City, N. Y.
Ripley Co., Inc., Middletown, Conn.
Schaub Engineering Co., Fred H., Chicago, Ill.
Sealmaster Bearings, Div. of Stephens-Adamson Mfg. Co., Aurora, Ill.
Square D Co., Industrial Controller Div., Milwaukee, Wis.
Techniflex Corp., Port Jervis, N. Y.
Trimount Instrument Co., Chicago, Ill.
United Electric Controls Co., Watertown, Mass.
Watkins Co., J. E., Maywood, Ill.
Westinghouse Electric Corp., Pittsburgh, Pa.

SWITCHES, MERCURY

Automatic Timing & Controls, Inc., King of Prussia, Pa.
Ebert Electronics Corp., Queens Village, N. Y.
G. M. Mfg. Co., New York, N. Y.
Galloway Co., G. W., Cooling Tower Div., Arcadia, Calif. (vibration cut-off)
General Controls Co., Glendale, Calif. and Skokie, Ill.
General Electric Co., Construction Materials Div., Bridgeport, Conn.
General Electric Co., Wiring Device Dept., Providence, R. I.
H-B Instrument Co., Philadelphia, Pa.
Mercoid Corp., Chicago, Ill.
Micro Switch Div. of Minneapolis-Honeywell Reg. Co., Freeport, Ill.
Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.
Minneapolis-Honeywell Regulator Co., Industrial Div., Philadelphia, Pa.
Newark Controls Co., Bloomfield, N. J.
Westinghouse Electric Corp., Pittsburgh, Pa.

SWITCHES, PNEUMATIC

Allen-Bradley Co., Milwaukee, Wis.
Automatic Control Co., St. Paul, Minn.
Bristol Co., The, Waterbury, Conn.
Controls Co. of America, Soreng Div., Schiller Park, Ill.
Cook Electric Co., Chicago, Ill.
Foxboro Co., Foxboro, Mass.
Johnson Service Co., Milwaukee, Wis.
Magnetrol, Inc., Chicago, Ill.
Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.
Minneapolis-Honeywell Regulator Co., Industrial Div., Philadelphia, Pa.
Penn Controls, Inc., Goshen, Ind.
Powers Regulator Co., Skokie, Ill.
Square D Co., Industrial Controller Div., Milwaukee, Wis.
Trerice Co., H. O., Detroit, Mich.
United Electric Controls Co., Watertown, Mass.

SWITCHES, PRESSURE AND VACUUM

Allen-Bradley Co., Milwaukee, Wis.
Automatic Control Co., St. Paul, Minn.
Bacharach Industrial Instrument Co., Pittsburgh, Pa.
Barksdale Valves, Los Angeles, Calif.
Bristol Co., The, Waterbury, Conn.
Cleveland Controls, Inc., Cleveland, O.
Controls Co. of America, Soreng Div., Schiller Park, Ill.
Cook Electric Co., Chicago, Ill.
Cooper Hewitt Electric Co., Div. of Sperti-Faraday, Inc., Hoboken, N. J.
Cutler-Hammer, Inc., Milwaukee, Wis.
Defender Instrument & Regulator Co., Boody, Ill.
Detroit Controls Div. of American-Standard, Detroit, Mich.
Dietz Co., Henry G., Long Island City, N. Y.
Dwyer Mfg. Co., F. W., Michigan City, Ind.
Fischer & Porter Co., Hatboro, Pa.
Foxboro Co., Foxboro, Mass.
Friez Instrument Div., Bendix Aviation Corp., Baltimore, Md.
Furnas Electric Co., Batavia, Ill.
General Controls Corp., Glendale, Calif. and Skokie, Ill.
General Electric Co., Apparatus Sales Div., Schenectady, N. Y.
Giannini & Co., Inc., G. M., Pasadena, Calif.
Healy Ruff Co., St. Paul, Minn.
Leach Relay Co., Los Angeles, Calif.
Longergan Co., J. E., Philadelphia, Pa.
Manning, Maxwell & Moore, Inc., Stratford, Conn.
McQuay-Norris Mfg. Co., St. Louis, Mo.
Mercoid Corp., Chicago, Ill.
Meriam Instrument Co., The, Cleveland, O.
Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.
Minneapolis-Honeywell Regulator Co., Industrial Div., Philadelphia, Pa.
Nason Co., Clarkston, Mich.
Newark Controls Co., Bloomfield, N. J.
Penn Controls, Inc., Goshen, Ind.
Rochester Mfg. Co., Inc., Rochester, N. Y.
Sarcotherm Controls, Inc., New York, N. Y.
Shallcross Controls, Inc., Markesan, Wis.
Square D Co., Industrial Controller Div., Milwaukee, Wis.
Synchro-Start Products, Inc., Skokie, Ill.
Trerice Co., H. O., Detroit, Mich.
United Electric Controls Co., Watertown, Mass.
United States Gauge Div. of American Machine and Metals, Inc., Sellersville, Pa.
Westinghouse Electric Corp., Pittsburgh, Pa.
White-Rodgers Co., St. Louis, Mo.

SWITCHES, TIME

Aemco Inc., Mankato, Minn.
A'G'A Div. of Elastic Stop Nut Corp. of America, Elizabeth, N. J.
Allen-Bradley Co., Milwaukee, Wis.
April Showers Co., Inc., Washington, D. C.
Automatic Devices Co., Inc., Western Springs, Ill.
Automatic Timing & Controls, Inc., King of Prussia, Pa.
Barber-Colman Co., Rockford, Ill.
Better Engineered Controls, Los Angeles, Calif.
Bristol Co., The, Waterbury, Conn.
Cissell Mfg. Co., W. M., Louisville, Ky.
Clock & Timer Dept., General Electric Co., Ashland, Mass.
Controls Co. of America, Soreng Div., Schiller Park, Ill.
Cramer Controls Corp., Centerbrook, Conn.
Cutler-Hammer, Inc., Milwaukee, Wis.
Edison Industries, Thomas A., Instrument Div., McGraw-Edison Co., West Orange, N. J.
Electronics Corp. of America, Cambridge, Mass.
General Controls Corp., Glendale, Calif. and Skokie, Ill.
General Electric Co., Apparatus Sales Div., Schenectady, N. Y.
Hammett Electric Mfg. Co., Kansas City, Mo.
Hansen Mfg. Co., Princeton, Ind. (timing motors and time machine)
Haydon Co., A. W., Waterbury, Conn.
Haydon Mfg. Co., Inc., Sub. General Time Corp., Torrington, Conn.
Heat-Timer Corp., New York, N. Y.
International Register Co., Chicago, Ill.
Mallory & Co., Inc., P. R., Indianapolis, Ind.
Miller-Harris Instrument Co., Milwaukee, Wis.
Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.
National Time & Signal Corp., Detroit, Mich.
Paragon Electric Co., Two Rivers, Wis.
Partlow Corp., The, New Hartford, N. Y.
Ranco Inc., Columbus, O.
Reliance Automatic Lighting Co., Racine, Wis.
Rhodes, Inc., M. H., Hartford, Conn.
Ripley Co., Inc., Middletown, Conn.
Sangamo Electric Co., Springfield, Ill.
Sarcotherm Controls., Inc., New York, N. Y.
Tork Time Controls, Inc., Mount Vernon, N. Y.
Westinghouse Electric Corp., Pittsburgh, Pa.
White-Rodgers Co., St. Louis, Mo.
Zenith Electric Co., Chicago, Ill.

SWIVEL PIPE COUPLINGS

See Joints, Pipe, Flexible Swing and Revolving

SYSTEMS, COMBUSTION CONTROL

Ace Instrument Co., Inc., Brooklyn, N. Y.
Askania Regulator Co., Chicago, Ill.
Aurora Pump Div., The New York Air Brake Co., Aurora, Ill.
Bailey Meter Co., Cleveland, O.
Barber-Colman Co., Rockford, Ill.
Bristol Co., Waterbury, Conn.
Brooke Engineering Co., Inc., Philadelphia.
Canton Stoker Corp., Canton, O.
Cash Co., A. W., Decatur, Ill.
Cleveland Controls, Inc., Cleveland, O.
Copes-Vulcan Div., Blaw-Knox Co., Erie, Pa.
Defender Instrument & Regulator Co., Boody, Ill.
De-Tec-Tronic Corp., Chicago, Ill.
Eclipse Fuel Engineering Co., Rockford, Ill.
Electronics Corp. of America, Cambridge, Mass.
Ess Instrument Co., Bergenfield, N. J.
Fischer & Porter Co., Hatboro, Pa.
Foster Wheeler Corp., New York, N. Y.
General Controls Co., Glendale, Calif.
Hagan Chemicals & Controls, Inc., Pittsburgh, Pa.
Hays Corp., Michigan City, Ind.
Heat-Timer Corp., New York, N. Y.
Illinois Engineering Products, American Air Filter Co., Inc., Louisville, Ky.
Leahy Mfg. Co., Los Angeles, Calif.
Leeds & Northrup Co., Philadelphia, Pa.
Lientz Co., B. P., Kansas City, Mo.
Mercoid Corp., Chicago, Ill.
Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.
Penn Controls, Inc., Goshen, Ind.
Reliance Instrument Mfg. Corp., Glen Cove, Long Island, N. Y.
Republic Flow Meters Co., Chicago, Ill.
Roth Co., Roy E., Rock Island, Ill.
Shallcross Controls, Inc., Markesan, Wis.
Standard Instrument Div., Heat-Timer Corp., New York, N. Y.
Stout & Sons, David, St. Louis, Mo.
Webster Engineering Co., Tulsa, Okla.
White-Rodgers Co., St. Louis, Mo.

SYSTEMS, CONDENSATE RETURN

Acker Corp., Meridian, Miss.
Advance Pump Co., Berkeley, Calif.
Aurora Pump Div., The New York Air Brake Co., Aurora, Ill.
Barnes & Jones, Inc., Newtonville, Mass.
Cissell Mfg. Co., Inc., W. M., Louisville, Ky.
Decatur Pump Co., Decatur, Ill.
Domestic Pump & Mfg. Corp., Shippensburg, Pa.
Dunham-Bush, Inc., West Hartford, Conn.
Eclipse Fuel Engineering Co., Rockford, Ill.
Goulds Pumps, Inc., Seneca Falls, N. Y.
Illinois Engineering Products, American Air Filter Co., Inc., Louisville, Ky.
Johnson Corp., The, Three Rivers, Mich.
Kaiser Co., E. B., Glenview, Ill.
Lattner Mfg. Co., P. M., Cedar Rapids, Iowa
Liqui-Therm Co., Brookfield, Wis.
Patterson-Kelley Co., Inc., The, E. Stroudsburg, Pa.
Sarco Co., Inc., New York, N. Y.
Sterling Engineering & Mfg. Corp., Hyde Park, Mass.
Stout & Sons, David, St. Louis, Mo.
Weil Pump Co., Chicago, Ill.
York-Shipley, Inc., York, Pa.

SYSTEMS, ELECTRIC PIPE HEATING

Fluid Systems, Inc., New Haven, Conn.
General Electric Co., Construction Materials Div., Bridgeport, Conn.

Hammett Electric Mfg. Co., Kansas City, Mo.
Hynes Electric Heating Div., Turbine Equipment Co., Westfield, N. J.
Industrial Engineering & Equipment Co., St. Louis, Mo.
Trent, Inc., Philadelphia, Pa.
Wiegand Co., Edwin L., Pittsburgh, Pa.

SYSTEMS, FIRE EXTINGUISHING, AND HEAT AND SMOKE DETECTORS

Allen Mfg. Co., W. D., Bellwood, Ill.
Ansul Chemical Co., Refrigeration Div., Marinette, Wis.
Blaw Knox Co., Power Piping & Sprinkler Div., Pittsburgh, Pa.
CO Two Systems, Fyr-Fyter Co., Newark, N. J.
Cardox Corp., Chicago, Ill.
Edison Industries, Thomas A., Instrument Div., McGraw-Edison Co., West Orange, N. J.
Grinnell Co., Inc., Providence, R. I.
Heat-Timer Corp., New York, N. Y.
Hodgman Mfg. Co., Inc., Taunton, Mass.
Mearlcrete Div., Mearl Mfg. Corp., Roselle Park, N. J.
Miller-Harris Instrument Co., Milwaukee, Wis.
Photobell Co., Inc., New York, N. Y.
Raisler Corp., Grimes Sprinkler Div., New York, N. Y.
Rockwood Sprinkler Co., Worcester, Mass.
Sperti Faraday, Inc., Adrian, Mich.
Worner Electronic Devices, Rankin, Ill.

SYSTEMS, HEATING, HIGH TEMPERATURE HOT WATER

Over 350 F

American Hydrotherm Corp., Long Island City, N. Y.
Barber-Colman Co., Rockford, Ill.
Buxton Mfg. Co., Dover, N. J.
Combustion Engineering Inc., New York, N. Y.
International Boiler Works, The, East Stroudsburg, Pa.
Kaiser Co., E. B., Glenview, Ill.
Preferred Utilities Mfg. Corp., New York, N. Y.
Ross Engineering Div., J. O., Midland-Ross Corp., New York, N. Y.
Taco Heaters, Inc., Cranston, R. I.

SYSTEMS, HEATING, HOT WATER

Barber-Colman Co., Rockford, Ill.
Bell & Gossett Co., Morton Grove, Ill.
Dunham-Bush, Inc., West Hartford, Conn.
Hoffman Specialty Mfg. Corp., Indianapolis, Ind.
Kaiser Co., E. B., Glenview, Ill.
Kehm Corp., The, Chicago, Ill.
Nesbitt, Inc., John J., Philadelphia, Pa.
Sarco Co., Inc., New York, N. Y.
Sarcotherm Controls, Inc., New York, N. Y.
Taco Heaters, Inc., Cranston, R. I.
Thrush & Co., H. A. Peru, Ind.
Triplex Heating Specialty Co., Inc., Peru, Ind.
Webster & Co., Warren, Camden, N. J.
Weil-McLain Co., Michigan City, Ind.

SYSTEMS, HEATING, VACUUM

Barnes & Jones, Inc., Newtonville, Mass.
Dunham-Bush, Inc., West Hartford, Conn.
Hoffman Specialty Mfg. Corp., Indianapolis, Ind.
Illinois Engineering Products, American Air Filter Co., Inc., Louisville, Ky.
Marsh Heating Equipment Co., Skokie, Ill.
Monash-Younker Co., Inc., Chicago, Ill.
Sarco Co., Inc., New York, N. Y.
Sarcotherm Controls, Inc., New York, N. Y.
Webster & Co., Warren, Camden, N. J.

SYSTEMS, HEATING, VAPOR

Barnes & Jones, Inc., Newtonville, Mass.
Dunham-Bush, Inc., West Hartford, Conn.
Hoffman Specialty Mfg. Corp., Indianapolis, Ind.
Illinois Engineering Products, American Air Filter Co., Inc., Louisville, Ky.
Marsh Heating Equipment Co., Skokie, Ill.
Monash-Younker Co., Inc., Chicago, Ill.
Sarco Co., Inc., New York, N. Y.
Sarcotherm Controls, Inc., New York, N. Y.
Webster & Co., Warren, Camden, N. J.

SYSTEMS, HEATING AND VENTILATING, GAS OR OIL FIRED, WARM AIR, FOR SCHOOL CLASSROOMS

American Foundry & Furnace Co., Bloomington, Ill.
Lennox Industries Inc., Des Moines, Ia.
Norman Products Co., Inc., Columbus, O.

SYSTEMS, HEATING, ZONE CONTROL

Acro Div., Robertshaw-Fulton Controls Co., Columbus, O.
Armstrong Machine Wks., Three Rivers, Mich.
Au-Temp-Co Corp., New York, N. Y.
Automatic Devices Co., Inc., Western Springs, Ill.
Automatic Timing & Controls, Inc., King of Prussia, Pa.
Barber-Colman Co., Rockford, Ill.
Barnes & Jones, Inc., Newtonville, Mass.
Bell & Gossett Co., Morton Grove, Ill.
Dravo Corp., Machinery Div., Pittsburgh, Pa.
Dunham-Bush, Inc., West Hartford, Conn.
Heat-Timer Corp., New York, N. Y.
Hoffman Specialty Mfg. Corp., Indianapolis, Ind.
Illinois Engineering Products, American Air Filter Co., Inc., Louisville, Ky.
Johnson Service Co., Milwaukee, Wis.
Mercoid Corp., Chicago, Ill.
Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.
Powers Regulator Co., Skokie, Ill.
Sarco Co., Inc., New York, N. Y.
Sarcotherm Controls, Inc., New York, N. Y.
SelecTemp Div., Iron Fireman Mfg. Co., Cleveland, O.
Thrush & Co., H. A., Peru, Ind.
Webster & Co., Warren, Camden, N. J.
Weil-McLain Co., Michigan City, Ind.
White-Rodgers Co., St. Louis, Mo.
Zone-Heat Regulator Co., Garrettsville, O.

SYSTEMS, HOT GAS DEFROSTING, FOR REFRIGERATION

Blazer & Son, M., Passaic, N. J.
Dean Thermo-Panel Coil Div., Dean Products, Inc., Brooklyn, N. Y.
Dole Refrigerating Co., Chicago, Ill.
Dunham-Bush, Inc., West Hartford, Conn.
Kramer Trenton Co., Trenton, N. J.
Larkin Coils, Inc., Atlanta, Ga.
McQuay, Inc., Minneapolis, Minn.
Penn Controls, Inc., Goshen, Ind.
Recold Corp., Los Angeles, Calif.
Refrigerating Specialties Co., Chicago, Ill.
Tenney Engineering, Inc., Union, N. J.
Vilter Mfg. Co., The, Milwaukee, Wis.
Watkins Co., J. E., Maywood, Ill.
York Corp., Subsid. of Borg-Warner Corp., York, Pa.

SYSTEMS, PROCESS HEATING, HIGH TEMPERATURE

American Hydrotherm Corp., Long Island City, N. Y.
Automatic Timing & Controls, Inc., King of Prussia, Pa.
Beltran Associates, Inc., Brooklyn, N. Y.
Buxton Mfg. Co., Dover, N. J.
Dow Chemical Co., The, Midland, Mich.
Dravo Corp., Machinery Div., Pittsburgh, Pa.
Drying Systems Co., Chicago, Ill.
Eclipse Fuel Engineering Co., Rockford, Ill.
Foster Wheeler Corp., New York, N. Y.
Hynes Electric Heating Div., Turbine Equipment Co., Westfield, N. J.
International Boiler Works, The, East Stroudsburg, Pa.
Kaiser Co., E. B., Glenview, Ill.
Mitchell & Co., Inc., W. K., Philadelphia, Pa.
Parks-Cramer Co., Fitchburg, Mass.
Peabody Engineering Corp., New York, N. Y.
Reznor Mfg. Co., Mercer, Pa.
Ross Engineering Div., J. O., Midland-Ross Corp., New York, N. Y.
St. Louis Blow Pipe & Heater Co., Div. of Young Sales Corp., St. Louis, Mo.
Sarcotherm Controls, Inc., New York, N. Y.
Struthers Wells Corp., Warren, Pa.
Trent, Inc., Philadelphia, Pa.

SYSTEMS, ROOF SPRAYING (FOR COOLING ROOFS)

April Showers Co, Inc., Washington, D. C.
Bete Fog Nozzle Inc., Greenfield, Mass.
Binks Mfg. Co., Chicago, Ill.
Muellermist Irrigation Co., Maywood, Ill.
Ruppright's Rotary Roof Cooler, Los Angeles, Calif.
Spray Engineering Co., Burlington, Mass.
Spraying Systems Co., Bellwood, Ill.
Water Cooling Corp., New York, N. Y.

TABLES, BENDING, PIPE

American Pipe Bending Machine Co., Inc., Poultney, Vt.

TAGS, VALVE, FOR IDENTIFYING VALVES

Better Engineered Controls, Los Angeles, Calif.
Chase Brass & Copper Co., Waterbury, Conn.
Meyer & Wenthe, Inc., Chicago, Ill.
Seton Name Plate Co., New Haven, Conn.

TANK CLEANING COMPOUNDS

See Compounds, Cleaning, Tank

TANK FITTINGS

See Fittings and Bushings, Fuel Oil Tank; Alarms, Liquid Level

TANK HEADS

See Parts, for Heating and Air Conditioning Equipment

TANK LININGS

See Coatings, Protective, for Metals

TANKS, BLOWOFF

Acme Welding, Div. of the United Tool & Die Co., West Hartford, Conn.
Adsco Div., Yuba Consolidated Industries, Inc., Buffalo, N. Y.
American Pipe & Steel Corp., Alhambra, Calif.
American Water Softener Co., Philadelphia, Pa.
Bigelow Co., The, New Haven, Conn.
Birchfield Boiler, Inc., Tacoma, Wash.
Bros, Inc., Minneapolis, Minn.
Buffalo Tank Corp., Dunellen, N. J.
Caldwell Co., W. E., Louisville, Ky.
Chicago Steel Tank Co., Div. of U. S. Industries, Inc., Chicago, Ill.
Crotty Mfg. Corp., Flushing, Long Island, N. Y.
Downingtown Iron Works, Inc., Div. of Pressed Steel Tank Co., Downingtown, Pa.
Ellicott Fabricators, Inc., Baltimore, Md.
Finnigan & Co., Inc., J. J., Atlanta, Ga.
Gabriel Boiler Co., Portland, Ore.
Graver Water Conditioning Co., New York, N. Y.
Hodge Boiler Wks., East Boston, Mass.
Hoppes Mfg. Co., Inc., Springfield, O.
International Boiler Works Co., The, East Stroudsburg, Pa.
Koven & Bro. Inc., L. O., Jersey City, N. J.
Lucey Boiler & Mfg. Corp., Chattanooga, Ill.
Manitowoc Shipbuilding, Inc, Manitowoc, Wis.
Morrison Brothers Co., Dubuque, Ia.
Nooter Corp., St. Louis, Mo.
Old Dominion Iron & Steel Corp., Richmond, Va.
Patterson-Kelley Co., Inc., East Stroudsburg, Pa.
Quaker City Iron Wks., Philadelphia, Pa.
Reco Products Div., Recony Corp., New York, N. Y.
Richmond Engineering Co., Richmond, Va.
Terre Haute Boiler Works Co., Terre Haute, Ind.
Union Iron Works, Erie, Pa.

TANKS, EXPANSION, FOR HOT WATER HEATING SYSTEMS

Acme Welding, Div. of the United Tool & Die Co., West Hartford, Conn.
Adsco Div., Yuba Consolidated Industries, Inc., Buffalo, N. Y.

American Tube Products, Inc., West Warwick, R. I. (pressurized)
Baseline Mfg. Corp. of Fla., St. Petersburg, Fla.
Bell & Gossett Co., Morton Grove, Ill.
Biggs Boiler Works Co., E. Akron, O.
Birchfield Boiler, Inc., Tacoma, Wash.
Buffalo Tank Corp., Dunellen, N. J.
Caldwell Co., W. E., Louisville, Ky.
Chicago Steel Tank Co., Div. of U. S. Industries, Inc., Chicago, Ill.
Ellicott Fabricators, Inc., Baltimore, Md.
Finnigan & Co., Inc., J. J., Atlanta, Ga.
Gabriel Boiler Co., Portland, Ore.
General Automatic Products Corp., Baltimore, Md.
Hoffman Specialty Mfg. Corp., Indianapolis, Ind.
International Boiler Works Co., The, East Stroudsburg, Pa.
Kehm Corp., The, Chicago, Ill.
Koven & Bro. Inc., L. O., Jersey City, N. J.
Morrison Brothers Co., Dubuque, Ia.
Old Dominion Iron & Steel Corp., Richmond, Va.
Patterson-Kelley Co., Inc., East Stroudsburg, Pa.
Quaker City Iron Wks., Philadelphia, Pa.
Reco Products Div., Recony Corp., New York, N. Y.
Rheem Mfg. Co., Chicago, Ill.
Richmond Engineering Co., Richmond, Va.
Scaife Co., Oakmont, Pa.
Thrush & Co., H. A., Peru, Ind.
Triplex Heating Specialty Co., Inc., Peru, Ind.
Western Blower Co., Seattle, Wash.
Wood Co., John, Conshohocken, Pa.

TANKS, PROCESS AND STORAGE

Acme Welding, Div. of the United Tool & Die Co., West Hartford, Conn.
Adsco Div., Yuba Consolidated Industries, Inc., Buffalo, N. Y.
Alco Products, Inc., Schenectady, N. Y.
Allcraft Mfg. Co., Inc., Cambridge, Mass.
Aluminum Co. of America, Pittsburgh, Pa.
American Car & Foundry Div. of ACF Industries, Inc., New York, N. Y.
American Hard Rubber Co., Div. of Amerace Corp., Butler, N. J. (Rubber lined)
American Pipe & Steel Corp., Alhambra, Calif.
Apex Reinforced Plastics, Cleveland, O.
Arco Products, Automotive Rubber Co., Detroit, Mich.
Argo Plastic Products, Cleveland, O.
Atlas Mineral Products Co., Mertztown, Pa.
Beaird Co., J. B., Shreveport, La.
Bell & Gossett Co., Morton Grove, Ill.
Bigelow Co., New Haven, Conn.
Biggs Boiler Wks. Co., E. Akron, O.
Binks Mfg. Co., Chicago, Ill.
Birchfield Boiler, Inc., Tacoma, Wash.
Bishopric Products Co., Cincinnati, O.
Bros, Inc., Minneapolis, Minn.
Buffalo Tank Corp., Dunellen, N. J.
Caldwell Co., W. E., Louisville, Ky.
Chicago Bridge & Iron Co., Chicago, Ill.
Chicago Metal Mfg. Co., Chicago, Ill.
Chicago Steel Tank Co., Div. of U. S. Industries, Inc., Chicago, Ill.
Cincinnati Metalcrafts Inc., Cincinnati, O.
Colonial Plastics Mfg. Co., Industrial Div., Cleveland, O. (plastic)
Condenser Service & Engineering Co., Inc., Hoboken, N. J.
Corite Products, Inc., Chicago, Ill. (plastic)
Day Co, The, Minneapolis, Minn.
Devine Mfg. Co., Inc., J. P., Pittsburgh, Pa.
Dillon Steam Boiler Wks., Inc., D. M., Fitchburg, Mass.
Downingtown Iron Works, Inc., Div. of Pressed Steel Tank Co., Downingtown, Pa.
Eclipse Fuel Engineering Co., Rockford, Ill.
Elastic Porcelain Lining Corp., Rochester, N. Y. (Tank linings)
Ellicott Fabricators, Inc., Baltimore, Md.
Erie City Iron Wks., Erie, Pa.
Falstrom Co., Passaic, N. J.
Filtrine Mfg. Co., Inc., Waldwick, N. J.
Finnigan & Co., Inc., J. J., Atlanta, Ga.
Fluor Products Co., Los Angeles, Calif.
Frick Co., Waynesboro, Pa.
Gabriel Boiler Co., Portland, Ore.
General Ceramics Corp., Keasbey, N. J. (chemical stoneware, plastic, & porcelain)
General Fittings Co., East Greenwich, R. I.
Goodrich Industrial Products Co., Akron, O. (Rubber lined)
Haveg Industries, Inc., Wilmington, Del.
Heat More Tankless Heater Co., Cambridge, Mass.
Heil Process Equipment Corp., Cleveland, Ohio
Hodge Boiler Works, East Boston, Mass.
Hoppes Mfg. Co., Inc., Springfield, O.
Industrial Plastic Fabricators, Norwood, Mass. (PVC)
International Boiler Wks., The, East Stroudsburg, Pa.
International Engineering, Inc., Dayton, O.
Kaustine Furnace & Tank Corp., Perry, N. Y.
Kellogg Co., M. W., The, New York, N. Y.
Kirk & Blum Mfg. Co., Cincinnati, O.
Knapp Mills, Inc., Long Island City, N. Y.
Knight, Maurice A., Akron, O. (acid-proof, lined steel)
Kopperman & Sons, Inc., Joseph, Philadelphia, Pa.
Koven & Bro. Inc., L. O., Jersey City, N. J.
Lead Lined Iron Pipe Co., Wakefield, Mass. (lead lined and all lead)
Littleford Bros., Inc., Cincinnati, O.
Lucey Boiler & Mfg. Corp., Chattanooga, Tenn.
Manitowoc Shipbuilding, Inc., Manitowoc, Wis.
Mesker Steel Corp., Geo. L., Evansville, Ind.
Metalweld, Inc., Industrial Welding Div., Philadelphia, Pa.
Morrison Brothers Co., Dubuque, Ia.
Newcomb-Detroit Co., Detroit, Mich.
Nooter Corp., St. Louis, Mo.
Old Dominion Iron & Steel Corp., Richmond, Va.
Patterson-Kelley Co., Inc., The, East Stroudsburg, Pa.
Philadelphia Pump Div., American Meter Co., Philadelphia, Pa.
Pittsburgh Plate Glass Co., Pittsburgh, Pa. (glass)
Portland Copper & Tank Works, Inc., South Portland, Me.
Quaid Fabrications, Inc., Palmyra, N. J.
Quaker City Iron Wks., Philadelphia, Pa.
Quelcor, Inc., Chester, Pa.
Queen City Engineering Co., Charlotte, N. C.
Reco Products Div., Recony Corp., New York, N. Y.
Rheem Mfg. Co., Chicago, Ill.
Richmond Engineering Co., Richmond, Va.
Rosebraugh Co., W. W., Salem, Ore.
Roth Co., Roy E., Rock Island, Ill.
S & C Mfg. Co., Cincinnati, O. (plastics)
Scaife Co., Oakmont, Pa.
Sims Co., Erie, Pa.
Smith Corp., A. O., Milwaukee, Wis.
Spurgeon Co., Warren, Mich.
Structural Fibers, Inc., Chardon, O. (plastic)
Struthers Wells Corp., Warren, Pa.
Terre Haute Boiler Works Co., Terre Haute, Ind.
United Sheet Metal Co., Inc., Columbus, O.
United States Rubber Co., New York, N. Y.
United States Stoneware Co., Plastics & Synthetics Div., Akron, O.
Valley Foundry & Machine Works, Inc., Fresno, Calif.
Van Noorden Co., E., Boston, Mass.
Western Blower Co., Seattle, Wash.
Whitlock Mfg. Co., W. Hartford, Conn.
Wood Co., John, Conshohocken, Pa.
Youngstown Welding & Engineering Co., Youngstown, O.
Yuba Mfg. Div., Yuba Consolidated Industries, Inc., Benicia, Calif.
Zingheim Co., William C., Chicago, Ill.

TAPE, DUCT, ADHESIVE, FOR SEALING JOINTS

Arno Adhesive Tapes, Inc., Michigan City, Ind.
Cain Mfg. Co., Birmingham, Ala.
Continental Tapes, Cayce, S. C.
Durkee-Atwood Co., Minneapolis, Minn.
Duro-Dyne Corp., Farmingdale, Long Island, N. Y.
Dutch Brand Div., Johns-Manville Corp., Chicago, Ill.
Goodrich Industrial Products Co., B. F., Akron, O.
Grant Wilson, Inc., Chicago, Ill.
Industrial Tape Div., Hampton Mfg. Co., New Rochelle, N. Y.
Johns-Manville, New York, N. Y.
Kendall Co., Polyken Sales Div., Chicago, Ill.
Miracle Adhesives Corp., Bellmore, N. Y.
Mortell Co., J. W., Kankakee, Ill.
Mystik Adhesive Products, Inc., Chicago, Ill.
Permacel, New Brunswick, N. J.
Seamless Rubber Co., The, Industrial Tape Div., New Haven, Conn.
Tropical Tape Div., Ft. Lauderdale, Fla.

TAPE, INDUSTRIAL, ADHESIVE

Arno Adhesive Tapes, Inc., Michigan City, Ind.
Boston Woven Hose & Rubber Co., Div. of American Biltrite Rubber Co., Cambridge, Mass.
By-Buk Co., Los Angeles, Calif.
Cain Mfg. Co., Birmingham, Ala.
Continental Tapes, Cayce, S. C.
Corbman Bros., Inc., Philadelphia, Pa.
Dayton Rubber Co., Dayton, O.
Dearborn Chemical Co., Chicago, Ill.
Dearborn Tape & Label Co., Dearborn, Mich.
Dresser Mfg. Div., Dresser Industries, Inc., Bradford, Pa.
Durkee-Atwood Co., Minneapolis, Minn.
Dutch Brand Div., Johns-Manville Corp., Chicago, Ill.
Flexrock Co., Philadelphia, Pa.
Gerrard & Co., A. J., Melrose Park, Ill.
Goodrich Industrial Products Co., Akron, O.
Johns-Manville, New York, N. Y.
Kendall Co., Polyken Sales Div., Chicago, Ill.
Labelon Tape Co., Inc., Rochester, N. Y.
Minnesota Mining & Mfg. Co., St. Paul, Minn.
Minnesota Mining & Mfg. Co., Adhesives & Coatings Div., Detroit, Mich.
Mystik Adhesive Products, Inc., Chicago, Ill.
New York Belting & Packing Co., Passaic, N. J.
Norton Co., Worcester, Mass.
Pam Narrow Fabrics Co., Oceanside, N. Y. (asbestos for pipe wrappings)
Pee Cee Tape & Label Co., Los Angeles, Calif. (Printed)
Permacel, New Brunswick, N. J.
Products Research Co., Los Angeles, Calif.
Rubber & Plastics Compound Co., New York, N. Y. (vinyl and polyethylene)
Seamless Rubber Co., The, Industrial Tape Div., New Haven, Conn.
Spring Packing Corp., Chicago, Ill.
Tropical Tape Div., Ft. Lauderdale, Fla.
United Mineral & Chemical Corp., New York, N. Y.
United States Rubber Co., New York, N. Y.

TAPS, PIPE

Cain Mfg. Co., Birmingham, Ala.
Greenfield Tap & Die Div. of United Greenfield Corp., Greenfield, Mass.
Landis Machine Co., Inc., Waynesboro, Pa.
Nye Tool Co., Chicago, Ill.
Threadwell Tap & Die Co., Greenfield, Mass.

TELESCOPES, FOR INSPECTING PIPE AND OTHER EQUIPMENT

Eder Instrument Co., Chicago, Ill.

TELEVISION, INDUSTRIAL, CLOSED-CIRCUIT

Diamond Power Specialty Corp., Lancaster, O.
Radio Corp. of America, Industrial Electronic Products, Camden, N. J.

TEMPERATURE AND HUMIDITY CONTROLS

See Humidistats; Recorder-Controllers; Thermostats; Regulators, Temperature

TEMPERATURE RECORDERS

See Recorders, Temperature

TEMPERATURE REGULATORS

See Regulators, Temperature

TEMPLATES, DRAWING, PIPING

Alco Products, Inc., Schenectady, N. Y.
Dietzgen Co., Eugene, Chicago, Ill.
Graphic Indicator Co., Los Angeles, Calif.

TEST CHAMBERS

See Chambers, Test, Controlled Temperature and Humidity

TESTERS, DUST SPOT, FOR AIR FILTERS

Gelman Instrument Co., Chelsea, Mich.
Hill & Co., E. Vernon, Lake Geneva, Wis.
Research Appliance Co., Allison Park, Pa.
Trerice Co., H. O., Detroit, Mich.

TESTERS, GAGE, DEAD WEIGHT

American Instrument Co., Inc., Silver Spring, Md.
Crosby Valve & Gage Co., Wrentham, Mass.
Dynametrics Corp., Burlington, Mass.
Manning, Maxwell & Moore, Inc., Stratford, Conn.
Mansfield & Green, Inc., Cleveland, O.
Trerice Co., H. O., Detroit, Mich.

TESTERS, LEAK, FOR PIPING AND VESSELS

Airserco Mfg. Co., Inc., Pittsburgh, Pa.
American Gas & Chemical, Inc., Leak-Tec Div., New York.
American Pipe & Steel Corp., Alhambra, Calif.
Chicago Forging and Mfg. Co., Chicago, Ill.
Dudgeon, Inc., Richard, Brooklyn, N. Y.
Farris Engineering Co., Palisades Park, N. J.
Greer Hydraulics, Inc., Jamaica, N. Y.
Johnson-Williams, Inc., Palo Alto, Calif.
Mechanical Products Corp., Chicago, Ill.
Universal Controls Corp., Dallas, Tex.
Whittington Pump & Engineering Corp., Indianapolis, Ind.

TESTERS, MOISTURE

Brabender Corp., Rochelle Park, N. J. (semi-automatic)
Hill & Co., E. Vernon, Lake Geneva, Wis.
Weston Instruments, Div. of Daystrom, Inc., Newark, N. J.

TESTERS, FOR OIL BURNER CONTROLS

Scully Signal Co., Melrose, Mass.

TESTERS, SMOKE

Bacharach Industrial Instrument Co., Pittsburgh, Pa.
De-Tec-Tronic Corp., Chicago, Ill.
Dwyer Mfg. Co., F. W., Michigan City, Ind.
Gelman Instrument Co., Chelsea, Mich.
Kilgore, Inc., International Flare-Signal Div., Westerville, O.
McNeill Smoke Eliminator Co., Chicago, Ill.
Pyrene CO TWO, Newark, N. J.
Research Appliance Co., Allison Park, Pa.

TESTERS, SOUND, FOR LOCATING MECHANICAL TROUBLES

Airserco Mfg. Co., Inc., Pittsburgh, Pa.
Marsh Instrument Co., Skokie, Ill.
Scott, Inc., H. H., Inst. Div., Maynard, Mass.

THAWERS, PIPE, ELECTRIC, PORTABLE

Fern, Ralph, Scranton, Pa.
Hammett Electric Mfg. Co., Kansas City, Mo.
Harold Electric Co., Walla Walla, Wash.
Hobart Bros. Co., Troy, O.
Trindl Products, Ltd., Chicago, Ill.
Wiegand Co., Edwin L., Pittsburgh, Pa.

THERMOMETER WELLS

See Wells, Thermometer

THERMOMETERS, INDICATING, INDUSTRIAL

Bacharach Industrial Instrument Co., Pittsburgh, Pa.
Barber-Colman Co., Rockford, Ill.
Bristol Co., The, Waterbury, Conn.
Defender Instrument & Regulator Co., Boody, Ill.
Dickson Co., The, Chicago, Ill.
Dillon & Co., Inc., W. C., Van Nuys, Calif.
Electric Auto-Lite Co., Instrument & Gauge Div., Toledo, O.
Fischer & Porter Co., Hatboro, Pa.
Foxboro Co., Foxboro, Mass.
Friez Instrument Div., Bendix Aviation Corp., Baltimore, Md.
G. M. Mfg. Co., New York, N. Y.
Garden City Instruments, Inc., Chicago, Ill.
General Electric Co., Apparatus Sales Div., Schenectady, N. Y.
H-B Instrument Co., Philadelphia, Pa.
Hill & Co., E. Vernon, Lake Geneva, Wis.
Illinois Testing Laboratories, Inc., Chicago, Ill.
Instrument Div., Robertshaw-Fulton Controls Co., Philadelphia, Pa.
Johnson Service Co., Milwaukee, Wis.
Manning, Maxwell & Moore, Inc., Stratford, Conn.
Marsh Instrument Co., Skokie, Ill.
Marshalltown Mfg. Co., Marshalltown, Ia.
Moeller Instrument Co., Richmond Hill, N. Y.
New York Air Valve Corp., Brooklyn, N. Y.
Pacific Transducer Corp., Los Angeles, Calif. (for surface temperatures)
Palmer Thermometers, Inc., Cincinnati (Norwood), O.
Partlow Corp., The, New Hartford, N. Y.
Philadelphia Thermometer Co., Philadelphia.
Powers Regulator Co., Skokie, Ill.
Precision Thermometer & Instrument Co., Philadelphia, Pa.
Preferred Utilities Mfg. Corp., New York.
Rochester Mfg. Co., Inc., Rochester, N. Y.
Royco Instruments, Palo Alto, Calif.
Sarco Co., Inc., New York, N. Y.
Schaevitz Engineering, Camden, N. J.
Scientific Instrument Co., Detroit, Mich.
Simpson Electric Co., Chicago, Ill.
Taylor Instrument Companies, Rochester, N. Y.
Trerice Co., H. O., Detroit, Mich.
United Instrument Co., Brooklyn, N. Y.
United States Gauge Div. of America Machine and Metals, Inc., Sellersville, Pa.
Velan Valve Corp., Plattsburgh, N. Y.
Victory Engineering Corp., Union, N. J.
Weiss & Son, Inc., Albert A., Brooklyn, N. Y.
Weksler Instruments Corp., Freeport, L. I., N. Y.
West Instrument Corp., Chicago, Ill.
Weston Instruments, Div. of Daystrom, Inc., Newark, N. J.
Yellow Springs Instrument Co., Inc., Yellow Springs, O.

THERMOMETERS, INDICATING, PIPE SURFACE TEMPERATURE

Bristol Co., The, Waterbury, Conn.
Illinois Testing Laboratories, Inc., Chicago, Ill.
Moeller Instrument Co., Richmond Hill, N. Y.
Pacific Transducer Corp., Los Angeles, Calif.
Palmer Thermometers, Inc., Cincinnati, O.
Pyrometer Instrument Co., Inc., Bergenfield, N. J.
Royco Instruments, Palo Alto, Calif.
Simpson Electric Co., Chicago, Ill.
Trerice Co., H. O., Detroit, Mich.
Victory Engineering Corp., Union, N. J.
West Instrument Corp., Chicago, Ill.
Yellow Springs Instrument Co., Inc., Yellow Springs, O.

THERMOMETERS, INDICATING, REMOTE-READING

Airguide Instrument Co., Chicago, Ill.
Assembly Products, Inc., Chesterland, O.
Beckman & Whitley, Inc., San Carlos, Calif.
Bristol Co., The, Waterbury, Conn.
Century Instrument Co., Detroit, Mich.
Defender Instrument & Regulator Co., Boody, Ill.
Dickson Co., The, Chicago, Ill.
Edison Industries, Thomas A., Instrument Div., McGraw-Edison Co., West Orange, N. J.
Electric Auto-Lite Co., Instrument & Gauge Div., Toledo, O.
Fischer & Porter Co., Hatboro, Pa.
Foxboro Co., Foxboro, Mass.
Friez Instrument Div., Bendix Aviation Corp., Baltimore, Md.
Fulton Sylphon Div., Robertshaw-Fulton Controls Co., Knoxville, Tenn.
Garden City Instruments, Inc, Chicago, Ill.
General Controls Co., Glendale, Calif.
Giannini & Co., Inc., G. M., Pasadena, Calif.
H-B Instrument Co., Philadelphia, Pa.
Illinois Testing Laboratories, Inc., Chicago, Ill.
Industrial Development Laboratories, Inc., Jersey City, N. J.
Instrument Div., Robertshaw-Fulton Controls Co., Philadelphia, Pa.
Johnson Service Co., Milwaukee, Wis.
Leeds & Northrup Co., Philadelphia, Pa.
Manning, Maxwell & Moore, Inc., Stratford, Conn.
Marsh Instrument Co., Skokie, Ill.
Marshalltown Mfg. Co., Marshalltown, Ia.
Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.
Minneapolis-Honeywell Regulator Co., Industrial Div., Philadelphia, Pa.
Moeller Instrument Co., Richmond Hill, N. Y.
Moore Products Co., Philadelphia, Pa.
New York Air Valve Corp., Brooklyn, N. Y.
Palmer Thermometers, Inc., Cincinnati (Norwood), O.
Penn Instruments Div., of Burgess-Manning Co., Philadelphia, Pa.
Philadelphia Thermometer Co., Philadelphia, Pa.
Powers Regulator Co., Skokie, Ill.
Rochester Mfg. Co., Inc., Rochester, N. Y.
Royco Instruments, Palo Alto, Calif.
Sarco Co., Inc., New York, N. Y.
Scientific Instrument Co., Detroit, Mich.
Simpson Electric Co., Chicago, Ill.
Taylor Instrument Companies, Rochester, N. Y.
Thompson Research & Mfg. Co., Davenport, Fla.
Thwing-Albert Instrument Co., Philadelphia, Pa.
Trerice Co., H. O., Detroit, Mich.
United States Gauge Div. of American Machine and Metals, Inc., Sellersville, Pa.
Victory Engineering Corp., Union, N. J.
Weksler Instruments Corp., Freeport, L. I., N. Y.
West Instrument Corp., Chicago, Ill.
Weston Instruments Div. of Daystrom, Inc., Newark, N. J.
Yellow Springs Instrument Co., Inc., Yellow Springs, O.

THERMOMETERS, INDICATING, WALL

Airguide Instrument Co., Chicago, Ill.
Barber-Colman Co., Rockford, Ill.
Bristol Co., The, Waterbury, Conn.
Defender Instrument & Regulator Co., Boody, Ill.
Dickson Co., The, Chicago, Ill.
Electric Auto-Lite Co., Instrument & Gauge Div., Toledo, O.
Fischer & Porter Co., Hatboro, Pa.
Foxboro Co., Foxboro, Mass.
G. M. Mfg. Co., New York, N. Y.
Garden City Instruments, Inc., Chicago, Ill.
General Electric Co., Apparatus Sales Div., Schenectady, N. Y.
H-B Instrument Co., Philadelphia, Pa.
Hill & Co., E. Vernon, Lake Geneva, Wis.
Illinois Testing Laboratories, Inc., Chicago, Ill.
Manning, Maxwell & Moore, Inc., Stratford, Conn.
Minneapolis-Honeywell Regulator Co., Industrial Div., Philadelphia, Pa.
Moeller Instrument Co., Richmond Hill, N. Y.
Palmer Thermometers, Inc., Cincinnati (Norwood), O.
Philadelphia Thermometer Co., Philadelphia, Pa.
Precision Thermometer & Instrument Co., Philadelphia, Pa.
Scientific Instrument Co., Detroit, Mich.
Taylor Instrument Companies, Rochester, N. Y.
Thwing-Albert Instrument Co., Philadelphia, Pa.
Trerice Co., H. O., Detroit, Mich.
United States Gauge Div. of American Machine and Metals, Inc., Sellersville, Pa.
Victory Engineering Corp., Union, N. J.
Weksler Instruments Corp., Freeport, L. I., N. Y.
West Instrument Corp., Chicago, Ill.

THERMOMETERS, KATA

Hill & Co., E. Vernon, Lake Geneva, Wis.

THERMOSTATIC BELLOWS

See Bellows, Thermostatic and Metallic

THERMOSTATIC BI-METALS

See Bi-Metals, Thermostatic

THERMOSTATIC TRAPS

See Traps, Steam, Thermostatic

THERMOSTAT GUARDS

See Guards, Thermostat, to Prevent Tampering

THERMOSTATS, DUCT TYPE

American District Telegraph Co., New York.
Automatic Devices Co., Inc., Western Springs, Ill.
Barber-Colman Co., Rockford, Ill.
Burling Instrument Co., Air Conditioning Div., Chatham, N. J.
Cam-Stat, Inc., Div. of The Paul Henry Co., Los Angeles, Calif.
Fenwal Inc., Ashland, Mass.
General Controls Co., Glendale, Calif.
Johnson Service Co., Milwaukee, Wis.
Leslie Co., Lyndhurst, N. J.
Mercoid Corp., The, Chicago, Ill.
Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.
Moeller Instrument Co., Richmond Hill, N. Y.
Penn Controls, Inc., Goshen, Ind.
Powers Regulator Co., Skokie, Ill.
Sarco Co., Inc., New York, N. Y.
Sarcotherm Controls, Inc., New York, N. Y.
Scaico Controls Inc., Delanco, N. J.
Stevens Mfg. Co., Inc., Mansfield, O.
Therm-O-Disc, Inc., Mansfield, O.
United Electric Controls Co., Watertown, Mass.
Vapor Heating Corp., Chicago, Ill.
Wesix Electric Heater Co., San Francisco.
White-Rodgers Co., St. Louis, Mo.
Wiegand Co., Edwin L., Pittsburgh, Pa.

THERMOSTATS, EFFECTIVE TEMPERATURE

Illinois Engineering Products, American Air Filter Co., Inc., Louisville, Ky.
Johnson Service Co., Milwaukee, Wis.
Sarcotherm Controls, Inc., New York, N. Y.
Wilcolator Co., Elizabeth, N. J.

THERMOSTATS, IMMERSION

Automatic Devices Co., Inc., Western Springs, Ill.
Barber-Colman Co., Rockford, Ill.
Burling Instrument Co., Air Conditioning Div., Chatham, N. J.
Detroit Controls Div. of American-Standard, Detroit, Mich.
Fenwal Inc., Ashland, Mass.
General Controls Co., Glendale, Calif. and Skokie, Ill.
General Electric Co., Apparatus Sales Div., Schenectady, N. Y.
H-B Instrument Co., Phiadelphia, Pa.
Hart Mfg. Co., Hartford, Conn.
Johnson Service Co., Milwaukee, Wis.
Leslie Co., Lyndhurst, N. J.
Mechanical Industries Production Co., Akron, O.
Mercoid Corp., The, Chicago, Ill.
Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.
Penn Controls, Inc., Goshen, Ind.
Philadelphia Thermometer Co., Philadelphia, Pa.
Powers Regulator Co., Skokie, Ill.
Precision Thermometer & Instrument Co., Philadelphia, Pa.
Sarco Co., Inc., New York, N. Y.
Sarcotherm Controls, Inc., New York, N. Y.
Spencer Thermostat Div., Metals & Controls Corp., Attleboro, Mass.
United Electric Controls Co., Watertown, Mass.
Vapor Heating Corp., Chicago, Ill.
Wesix Electric Heater Co., San Francisco, Calif.
White-Rodgers Co., St. Louis, Mo.
Wiegand Co., Edwin L., Pittsburgh, Pa.
Wilcolator Co., Elizabeth, N. J.

THERMOSTATS, RADIANT HEAT

Automatic Devices Co., Inc., Western Springs, Ill.
Ceilheat, Inc., Knoxville, Tenn.
Detroit Controls Div. of American-Standard, Detroit, Mich.
Everwarm, Inc., Knoxville, Tenn.
Fulton Sylphon Div., Robertshaw-Fulton Controls Co., Knoxville, Tenn.
General Controls Co., Glendale, Calif. and Skokie, Ill.
General Electric Co., Construction Materials Div., Bridgeport, Conn.
General Electric Co., Wiring Device Dept., Providence, R. I.
Mechanical Industries Production Co., Akron, O.
Mercoid Corp., The, Chicago, Ill.
Penn Controls, Inc., Goshen, Ind.
Roberson, Inc., Seattle, Wash.
Sarco Co., Inc., New York, N. Y.
Sarcotherm Controls, Inc., New York, N. Y.
Sunwarm, Inc., Kingsport, Tenn.
Thrush & Co., H. A., Peru, Ind.
White-Rodgers Co., St. Louis, Mo.
Wiegand Co., Edwin L., Pittsburgh, Pa.

THERMOSTATS, ROOM OR WALL

A-P Controls Div., Controls Co. of America, Milwaukee, Wis.
Acro Div., Robertshaw-Fulton Controls Co., Columbus, O.
Automatic Devices Co., Inc., Western Springs, Ill .
Barber-Colman Co., Rockford, Ill.
Baso, Inc., Milwaukee, Wis.
Cam-Stat, Inc., Div. of The Paul Henry Co., Los Angeles, Calif.
Controls Co. of America, Soreng Div., Schiller Park, Ill.
Crown Controls Co., Inc., New Bremen, O.
Detroit Controls Div. of American-Standard, Detroit, Mich.
Electronics Corp. of America, Cambridge, Mass.
Everwarm, Inc., Knoxville, Tenn.
Fulton Sylphon Div., Robertshaw-Fulton Controls Co., Knoxville, Tenn.
General Controls Co., Glendale, Calif. and Skokie, Ill.
General Electric Co., Appliance Control Dept., Morrison, Ill.
General Electric Co., Apparatus Sales Div., Schenectady, N. Y.
Iron Fireman Mfg. Co., Cleveland, O.
Johnson Service Co., Milwaukee, Wis.
McCorkle Co., D. H., Berkeley, Calif.
McQuay-Norris Mfg. Co., St. Louis, Mo.
Mercoid Corp., The, Chicago, Ill.
Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.
National Controls, Inc., Newton, Mass.
Penn Controls, Inc., Goshen, Ind.
Powers Regulator Co., Skokie, Ill.
Roberson Inc., Seattle, Wash.
Sarco Co., Inc., New York, N. Y.
Sarcotherm Controls, Inc., New York, N. Y.
Spencer Thermostat Div., Metals & Controls Corp., Attleboro, Mass.
Thrush & Co., H. A., Peru, Ind.
Triplex Heating Specialty Co., Inc., Peru, Ind.
United Electric Controls Co., Watertown, Mass.
Vapor Heating Corp., Chicago, Ill.
Wesix Electric Heater Co., San Francisco.
White-Rodgers Co., St. Louis, Mo.
Wiegand Co., Edwin L., Pittsburgh, Pa.
Wilcolator Co., Elizabeth, N. J.

THERMOSTATS, SURFACE

Automatic Devices Co., Inc., Western Springs, Ill.
Barber-Colman Co., Rockford, Ill.
Cam-Stat, Inc., Div. of The Paul Henry Co., Los Angeles, Calif.
Cox & Co., Inc., New York, N. Y.
Detroit Controls Div. of American-Standard, Detroit, Mich.
Fenwal Inc., Ashland, Mass.
General Controls Co., Glendale, Calif. and Skokie, Ill.
Hart Mfg. Co., Hartford, Conn.
Iron Fireman Mfg. Co., Cleveland, O.
Johnson Service Co., Milwaukee, Wis.
McCorkle Co., D. H., Berkeley, Calif.
Mears Electric Controls, Portland, Ore.
Mechanical Industries Production Co., Akron, O.
Mercoid Corp., The, Chicago, Ill.
Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.
Penn Controls, Inc., Goshen, Ind.
Ranco Inc., Columbus, O.
Red Spot Electric Co., Tacoma, Wash.
Roberson Inc., Seattle, Wash.
Sarco Co., Inc., New York, N. Y.
Sarcotherm Controls, Inc., New York, N. Y.
Spencer Thermostat Div., Metals & Controls Corp., Attleboro, Mass.
Stevens Mfg. Co., Inc., Mansfield, O.
Therm-O-Disc, Inc., Mansfield, O.
Triplex Heating Specialty Co., Inc., Peru, Ind.
United Electric Controls Co., Watertown, Mass.
White-Rodgers Co., St. Louis, Mo.
Wiegand Co., Edwin L., Pittsburgh, Pa.
Wilcolator Co., Elizabeth, N. J.

THERMOSTATS, TWO STAGE, FOR COOLING

Automatic Devices Co., Inc., Western Springs, Ill. (multi-stage, 2 to 6 stage)
Barber-Colman Co., Rockford, Ill.
General Controls Co., Glendale, Calif.
Mercoid Corp., The, Chicago, Ill.
Penn Controls, Inc., Goshen, Ind.
Ranco Inc., Columbus, O.
Sarco Co., Inc., New York, N. Y.
Sarcotherm Controls, Inc., New York, N. Y.

THERMOSTATS, TWO STAGE, FOR HEATING

Automatic Devices Co., Inc., Western Springs, Ill. (multi-stage, 2 to 6 stage)
Barber-Colman Co., Rockford, Ill.
General Controls Co., Glendale, Calif.
Mears Electric Controls, Portland, Ore.
Mercoid Corp., The, Chicago, Ill.
Sarco Co., Inc., New York, N. Y.
Sarcotherm Controls, Inc., New York, N. Y.
Wiegand Co., Edwin L., Pittsburgh, Pa.

THERMOSTATS, TWO TEMPERATURE OR DUAL

Automatic Devices Co., Inc., Western Springs, Ill.
Barber-Colman Co., Rockford, Ill.
Burling Instrument Co., Air Conditioning Div., Chatham, N. J.
Detroit Controls Div. of American-Standard, Detroit, Mich.
Fenwal Inc., Ashland, Mass.
Franklin Dales Co., Akron, O.
General Controls Co., Glendale, Calif. and Skokie, Ill.
H-B Instrument Co., Philadelphia, Pa.
Illinois Engineering Products, American Air Filter Co., Inc., Louisville, Ky.
Iron Fireman Mfg. Co., Cleveland, O.
Johnson Service Co., Milwaukee, Wis.
Mercoid Corp., The, Chicago, Ill.
Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.
Powers Regulator Co., Skokie, Ill.
Roberson Inc., Seattle, Wash.
Sarco Co., Inc., New York, N. Y.
Sarcotherm Controls, Inc., New York, N. Y.
United Electric Controls Co., Watertown, Mass.
Vapor Heating Corp., Chicago, Ill.
White-Rodgers Co., St. Louis, Mo.
Wiegand Co., Edwin L., Pittsburgh, Pa.

THERMOSTATS, WEATHER COMPENSATING

Au-Temp-Co Corp., New York, N. Y.
Automatic Devices Co., Inc., Western Springs, Ill.
Barber-Colman Co., Rockford, Ill.
Crown Controls Co., Inc., New Bremen, O.
Detroit Controls Div. of American-Standard, Detroit, Mich.
General Electric Co., Appliance Control Dept., Morrison, Ill.
Heat-Timer Corp., New York, N. Y.
Johnson Service Co., Milwaukee, Wis.
Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.
Powers Regulator Co., Skokie, Ill.
Sarco Co., Inc., New York, N. Y.
Sarcotherm Controls, Inc., New York, N. Y.
United Electric Controls Co., Watertown, Mass.
White-Rodgers Co., St. Louis, Mo. (Level-Temp)

THREADERS, PIPE

See Stocks and Dies

TIME RECORDER-TOTALIZERS

See Recorder-Totalizers, Time

TIME SWITCHES

See Switches, Time

TONGS, PIPE

Armstrong Bros. Tool Co., Chicago, Ill.
Billings & Spencer Co., Hartford, Conn.
Chicago Specialty Mfg. Co., Chicago, Ill.
Williams & Co., J. H., Buffalo, N. Y.

TOOLS (CHISELS, PLIERS, ETC.)

Adre Co., The, Hales Corners, Wis. (burnishers for electrical contacts)
Allan Distributors, Long Island City, N. Y. (liquid tool for loosening rusted parts)
Allison-Campbell Div. of American Chain & Cable Co., Inc., Bridgeport, Conn. (abrasive cut-off machines)
Ampco Metal, Inc., Milwaukee, Wis.
Atkins Saw Div., Borg-Warner Corp., Indianapolis, Ind. (hack saws, files)
Badger Sales Co., Inc., Los Angeles, Calif. (magnifying inspectoscope for inspection of hard-to-get-at places)
Basford Co., H. R., San Francisco, Calif. (pliers)
Bestt Rollr Co., Fond du Lac, Wis. (applicator for painting pipe lines)
Billings & Spencer Co., Hartford, Conn.
Birks Mfg. Co., Meriden, Conn. (Pittsburgh lock seam opener)
Black & Decker Mfg. Co., The, Towson, Md. (electric screw driver)
Bonney Forge & Tool Works, Allentown, Pa.
Boston Machine Works Co., Lynn, Mass. (nozzle extractor)
Bostich Co., East Greenwich, R. I. (staplers and stitchers)
Brown-Brockmeyer Co., Inc., Dayton, O. (tool grinders)
Buckeye Tools Corp., Dayton, O. (Portable air wrenches and sheet metal nibblers)
Caliputer, Rancho Sante Fe, Calif. (Caliper-scale)
Cam-Lok Div., Empire Products, Inc., Cincinnati, O. (electrode holders)
Carlson Rules Works, Disston Div., H. K. Porter Co. (Delaware)
Collins Machinery Corp., Los Angeles, Calif.
Crescent Tool Co., Jamestown, N. Y.
Demo-Haines Tool Corp., Machine Works, El Segundo, Calif. (portable rotary hammer & drills)
Diamond Tool & Horseshoe Co., Duluth, Minn. (wrenches)
Dreier Brothers, Inc., Chicago, Ill. (level for determining pitch of pipe; hack saws)
Duro-Dyne Corp., Farmingdale, L. I., N. Y. (file handles and solder iron handles, punches)
Duro Metal Products Co., Chicago, Ill.
Engesser & Co., William L., El Monte, Calif. (bull bits, angle drill attachment)
Erie Tool Wks., Erie, Pa. (Vises, cutter wheels, rollers)
Fairmount Tool & Forging, Inc., Cleveland.
Fastway Fasteners, Inc., Lorain, O. (for hanging duct straps, heating units, etc. on masonry walls)
Franklin Balmar Corp., Baltimore, Md. (disc grinders)
Gel-Me Co., Bloomington, Ill. (electric sound probe for locating mechanical trouble)
Greene, Tweed & Co., North Wales, Pa.
Greenlee Tool Co., Div. of Greenlees Bros. & Co., Rockford, Ill.
Hamer-Dril Co., New York, N.Y. (attachment for electric drill to make power hammer)
Hexdall Co., A. M., Morris, Ill. (Pittsburgh lock hammers, tee hammers, seam openers)
Hilti Rapid Fastening Systems, Inc., Stamford, Conn. (hammer and power assisted drive tools)
Howes-Wood Co., Cambridge, Mass. (hacksaws, blades, handsaws)
Hydrozion Engineering Co., Inc., Kansas City, Mo. (earth boring auger)
Independent Blade Corp., Joliet, Ill. (plastic cutting & other saw blades)
Instrument Cases, Div. of TA Mfg. Corp., Los Angeles, Calif. (instrument cases)
Jaco Devices Co., Hingham, Mass. (drill attachment for sawing, etc.)
Kass Hardware & Supply Co., Inc., Bronx, N. Y. (drills for sheet metal)
Kent-Moore Organization, Inc., Warren, Mich.
Key-Hak Div., Producers & Distributors, Inc., Allentown, Pa. (hack saw blades for portable power hack saw)
Lenco, Inc., Jackson, Mo. (electrode holders)
Lenk Mfg. Co., Franklin, Ky. (electric soldering irons)
Levow, David, Brooklyn, N. Y. (3 way clamp)
Lufkin Rule Co., Saginaw, Mich. (steel tapes and folding rules)
Matrix Engineering Corp., Minneapolis, Minn. (pneumatically operated nail driver for concrete, wood, sheet metal)
Millers Falls Co., Greenfield, Mass.
Milwaukee Electric Tool Corp., Milwaukee, Wis. (electric screw drivers and hack saws)
Misener Mfg. Co., Inc., Syracuse, N. Y. (hole saws)
Nielsen, Inc., E. V., Stamford, Conn.
Nupla Mfg. Co., Los Angeles, Calif. (hammers of all types)
Omega Products, Chicago, Ill. (pocket size voltage tester)
Owens Co., H., Culver City, Calif. (pattern developer tool for sheet metal work)
Petersen Mfg. Co., DeWitt, Nebr. (clamps)
Phillips Drill Co., Michigan City, Ind. (impact hammers)
Pickett & Eckel, Inc., Alhambra, Calif. (slide rule)
Pioneer Tool Co., Racine, Wis. (scratch awls, crimping pliers, saw handles)
Port City Machine & Tool Co., Muskegon, Mich. (for closing Pittsburgh Lock)
Proto Tool Co., Div. of Pendleton Tool Industries, Inc., Los Angeles, Calif.
R C S Tool Corp., Bloomington, Ill. (reciprocating saw attachment; right angle drill attachments)
Ramset Fastening System, Winchester-Western Div., Olin Mathieson Chemical Corp., Cleveland, O. (Powder-actuated tools, hammer)
Ransburg Electro-Coating Corp., Indianapolis, Ind. (Paint spray equipment)
Rawlplug Co., Inc., The, New Rochelle, N. Y. (drills for masonry)
Refrigeration Devices Co., Nutley, N. J. (oiler for refrigeration compressors)
Reiner & Campbell Co., Inc., Newark, N. J. (Dividers, drive cleat notchers; clip punch; swivel head squeezer tong)
Remington Arms Co., Inc., Bridgeport, Conn. (powder-actuated tools)
Richmont, Inc., Monrovia, Calif.
Rotary Concrete Drill Co., Pasadena, Calif. (Drill bits)
Rotor Tool Co., Cleveland, O.
Salsbury Corp., Los Angeles, Calif. (air hammer)
Scharf Mfg. Co., J. H., Omaha, Nebr. (magnesium levels)
Schild Mfg. Co., Milwaukee, Wis.
Skinner Co., M. B., South Bend, Ind. (pipe drilling adapter)
Snap-on Tools Corp., Kenosha, Wis.
Stanley Works, The, New Britain, Conn.
Superior Pneumatic & Mfg. Co., Inc., Cleveland, O. (air hammer)
Superior Valve & Fittings Co., Pittsburgh, Pa. (wrenches, valving, hand)
Thompson & Son Co., The Henry G., New Haven, Conn.
Truco Masonry Drilling Div., Wheel Trueing Tool Co., Detroit, Mich. (concrete drills)
Union Steel Chest Corp., LeRoy, N. J. (tool chests)
Walton Co., Hartford, Conn. (pipe and stud extractors)
Wassco Electric Products Corp., St. Petersburg, Fla. (soldering pliers for copper tubing)
Watervilet Tool Co., Inc., Albany, N. Y. (air hammer, pneumatic sander)
Williams & Co., J. H., Buffalo, N. Y.
Wodack Electric Tool Corp., Chicago, Ill. (hammers, electric; groovers, plaster)
Yeats Appliance Dolly Sales Co., Milwaukee, Wis. (dolly for moving equipment upstairs)
Zimmerman Packing, Cincinnati, O. (Gasket cutter)

TOOLS, FLARING, FOR TUBING

Anderson Metals Corp., Kansas City, Mo.
Armstrong-Bridgeport Tool Mfg. Corp., Belleville, N. J.
Armstrong Bros. Tool Co., Chicago, Ill.
Bonney Forge & Tool Works, Allentown, Pa.
Chase Brass & Copper Co., Waterbury, Conn
Chicago Pneumatic Tool Co., New York.
Chicago Specialty Mfg. Co., Chicago, Ill.
Duro Metal Products Co., Chicago, Ill.
Engesser & Co., William L., El Monte, Calif.
Erie Tool Works, Erie, Pa.
Fairmount Tool & Forging, Inc., Cleveland.
Fine Products Co., Berwyn, Ill.
Imperial Brass Mfg. Co., Chicago, Ill.
Kent-Moore Organization, Inc., Warren, Mich.
Madden Brass Products Co., Aurora, Ill.
Miller Mfg. Co., St. Paul, Minn.
Mueller Co., Decatur, Ill.
Nye Tool Co., Chicago, Ill.
Parker-Hannifin Corp., Tube & Hose Fittings Div., Cleveland, O.
Penn Brass & Copper Co., Erie, Pa.
Research Vacuum Supply Co., Chicago, Ill. (Press gears)
Sac Tool Mfg. Co., St. Louis, Mo.
Schaul Mfg. Co., Cleveland, Ohio
Snap-On Tools Corp., Kenosha, Wis.
Span Brass Mfg. Co., Otsego, Mich.
Talon Tools, Inc., North Arlington, N. J.
Williams & Co., J. H., Buffalo, N. Y.
Wilson Co., K. R., Arcade, N. Y.
Wilson, Inc., Thomas C., Long Island City.
Wilson Manufacturing Co., Memphis, Tenn.

TORCHES, BRAZING SOLDERING AND WELDING

Aeroil Products Co., Inc., South Hackensack, N. J.
Aeroprojects, Inc., West Chester, Pa.
Air Reduction Sales Co., A Div. of Air Reduction Co., Inc., New York, N. Y.
Allied Weld-Craft, Inc., Indianapolis, Ind.
Atlas Welding Accessories, Inc., Ferndale, Mich.
Bernz Co., Otto, Rochester, N. Y.
Borm Mfg. Co., Elgin, Ill.
Clayton & Lambert Mfg. Co., Louisville, Ky.
Dockson Corp., Detroit, Mich.
Ergolyte Mfg. Co., Philadelphia, Pa.
Eutectic Welding Alloys Corp., Flushing, N. Y.
Goss Gas, Inc., Glenshaw, Pa.
Harris Calorific Co., The, Cleveland, O.
Ideal Industries, Inc., Sycamore, Ill.
Insto-Gas Corp., Detroit, Mich.
Johnson Gas Appliance Co., Cedar Rapids, Ia.
K-G Equipment Co., Allentown, Pa.
Lenk Mfg. Co., Franklin, Ky.
Lincoln Electric Co., The, Cleveland, O.
Linde Co., Div. of Union Carbide Corp., New York, N. Y.
Liquid Carbonic Div. of General Dynamics Corp., Chicago, Ill.
Marquette Mfg. Co., Inc., Minneapolis, Minn.
Mid-States Welder Mfg. Co., Chicago, Ill.
Minn-Kota Foundry & Mfg. Co., Moorhead, Minn.
Modern Engineering Co., St. Louis, Mo.
Mutual Liquid Gas & Equipment Co., Gardena, Calif.
National Cylinder Gas Div. of Chemetron Corp., Chicago, Ill.
Prepo Corp., Edgerton, Wis.
Ransome Torch & Burner Co., Emeryville, Calif.
Reiner & Campbell Co., Inc., Newark, N. J.
Research Vacuum Supply Co., Chicago, Ill.
Sac Tool Mfg. Co., St. Louis, Mo.
Seelye Craftsmen, The, Minneapolis, Minn.
Selas Corp of America, Dresher, Pa.
Sight Feed Generator Co., West Alexandria, O.
Smith Welding Equipment Corp., Minneapolis.
Ferrit Mfg. Co., St. Paul, Minn.
Trindl Products, Ltd., Chicago, Ill.
Turner Brass Works, The, Sycamore, Ill.
Velocity Power Tool Co., Div. of Mine Safety Appliances Co., Pittsburgh, Pa.
Victor Equipment Co., Welding Equipment Div., San Francisco, Calif.
Weldit, Inc., Detroit, Mich. (for L-P gas, also oxy-acetylene)

TOWERS, COOLING, ATMOSPHERIC DRAFT

American Cooling Tower Co., Kansas City, Mo.
Binks Mfg. Co., Chicago, Ill.
Fluor Products Co., Whittier, Calif.
Galloway Co., G. W., Cooling Tower Div., Arcadia, Calif.
Koch Engineering Co., Inc., Wichita, Kans.
Lilie-Hoffmann Cooling Towers, Inc., St. Louis, Mo.
Marley Co., The, Kansas City, Mo.
Mason Products, Inc., Woburn, Mass.
Peerless Products Div., United Cooling Towers, Inc., N. Little Rock, Ark.
Phillips Cooling Tower Co., Inc., Brooklyn.
Pritchard & Co. of California, J. F., Kansas City, Mo.
Stewart Ice Machine Co., Pomona, Calif.
Thermal Agency, Houston, Tex.
TOT Towers, Inc., Houston, Tex.
Toungate & Coats, Austin, Tex.
Water Cooling Corp., New York, N. Y.
Water Cooling Equipment Co., St. Louis, Mo.

TOWERS, COOLING, MECHANICAL DRAFT

Acme Industries, Inc., Jackson, Mich.
Air Purification Service, Inc., New York, N. Y.
Airtemp Construction, Div. of Chrysler Corp., Dayton, O.
American Coils Co., Farmingdale, N. J.
American Cooling Tower Co., Kansas City, Mo.
Arkla Air Conditioning Corp., Little Rock, Ark.
Baldwin Ward Mfg. Co., Inc., Ottawa, Ks.
Baltimore Aircoil Co., Inc., Baltimore, Md.
Binks Mfg. Co., Chicago, Ill.
Blazer & Son, M., Passaic, N. J.
Carrier Corp., Syracuse, N. Y.
Chrysler Airtemp, Div. of Chrysler Corp., Dayton, O.
Cool-Ette, Inc., Detroit, Mich.
Curtis Mfg. Co., Refrigeration Div., St. Louis.
Deansteel Products Co., San Antonio, Tex.
Degree Corp., Kansas City, Mo.
Drayer-Hanson, Div. of National-U. S. Radiator Corp., Los Angeles, Calif.
Dunham-Bush, Inc., West Hartford, Conn.
Embassy Steel Products, Inc., Brooklyn, N. Y.
Fluor Products Co., Whittier, Calif.
Foster Wheeler Corp., New York, N. Y.
Galloway Co., G. W., Cooling Tower Div., Arcadia, Calif.
Goodfellow Co., Inc., E. D., Memphis, Tenn.
Governair Corp., Oklahoma City, Okla.
Halstead & Mitchell, Pittsburgh, Pa.
Havens Cooling Towers, Div. of Havens Structural Steel Co., Kansas City, Mo.
Hindle Transformer Co., Inc., Flemington, N. J.
Kennard Products, American Air Filter Co., Inc., Louisville, Ky.
Krueger Air Conditioning Co., Tucson, Ariz.
Lakewood Engineering & Mfg. Co., Chicago, Ill.
Larkin Coils, Inc., Atlanta, Ga.
Lilie-Hoffmann Cooling Towers, Inc., St. Louis, Mo.
Marley Co., The, Kansas City, Mo.
Marlo Coil Co., St. Louis, Mo.
Mason Products, Inc., Woburn, Mass.
Master-Bilt Refrigeration Mfg. Co., St. Louis, Mo.
Mayer Refrigerating Engineers, Inc., Lincoln Park, N. J.
McQuay, Inc., Minneapolis, Minn.
Morris Sheet Metal Works, Columbus, O.
Niagara Products Co., Phoenix, Ariz.
Peerless Products Div., United Cooling Towers, Inc., N. Little Rock, Ark.
Phillips Cooling Tower Co., Inc., Brooklyn, N. Y.
Pritchard & Co. of California, J. F., Kansas City, Mo.
Reco Products Div., Recony Corp., New York, N. Y.
Recold Corp., Los Angeles, Calif.
Refrigeration Appliances, Inc., Chicago, Ill.
S & C Mfg. Co., Cincinnati, O.
Schancke, Inc., Evansville, Ind.
Silvercraft, Inc., Louisville, Ky.
Smithco Engineering, Inc., Cooling Tower Div., Houston, Tex.
Sun-Fire Stoker Corp., New Albany, Ind.
Tedco Cooling Towers, Div. of Engineering & Development Co., Inc., St. Louis, Mo.
TOT Towers, Inc., Houston, Tex.
Toungate & Coats, Austin, Tex.
Vogt Machine Co., Henry, Louisville, Ky. (packaged unit with condenser, pump, etc.)
Water Cooling Corp., New York, N. Y.
Water Cooling Equipment Co., St. Louis, Mo.
Wayne Coil & Tower Corp., Pompton Plains, N. J.

TOWERS, COOLING, NOISE ELIMINATION FOR

See Noise Elimination for Cooling Towers

TRANSFORMERS, BOOST AND BUCK

(for voltage control)

Acme Electric Corp., Cuba, N. Y.
General Electric Co., Apparatus Sales Div., Schenectady, N. Y.
Hindle Transformer Co., Inc., Flemington, N. J.

TRANSFORMERS, ELECTRIC

Acme Electric Corp., Cuba, N. Y.
Allis-Chalmers Mfg. Co., Milwaukee, Wis.
Arjac Products Inc., Rochester, N. Y.
Central Transformer Corp., Pine Bluff, Ark.
Crown Controls Co., Inc., New Bremen, O.
Dormeyer Industries, Chicago, Ill.
Eisler Engineering Co., Inc., Newark, N. J.
Essex Wire Corp., Ft. Wayne, Ind.
General Controls Co., Glendale, Calif., and Skokie, Ill.
General Electric Co., Apparatus Sales Div., Schenectady, N. Y.
Hammett Electric Mfg. Co., Kansas City, Mo.
Jefferson Electric Co., Bellwood, Ill.
Line Material Industries, McGraw-Edison Co., Milwaukee, Wis.
National Controls, Inc., Newton, Mass.
Rex Welder Co., Benton Harbor, Mich.
Schaevitz Engineering, Camden, N. J.
Sola Electric Co., Chicago, Ill. (voltage regulating)
Sperti Faraday, Inc., Adrian, Mich.
Taylor-Winfield Corp., Warren, O.
Thermador Electrical Mfg., Los Angeles.
Trindl Products, Ltd., Chicago, Ill.
Union Electric & Mfg. Co., Jersey City, N. J. (ignition)
Wagner Electric Corp., St. Louis, Mo.
Webster Electric Co., Racine, Wis. (oil burner)
Westinghouse Electric Corp., Pittsburgh, Pa.

TRANSMISSION DRIVES

See Drives, Chain, Flat Belt and V-Belt

TRANSMITTERS, FLOW

Barton Instrument Corp., Monterey Park, Calif.
Brooks Rotameter Co., Lansdale, Pa.
Hagan Chemicals & Controls, Inc., Pittsburgh, Pa.
Moore Products Co., Philadelphia, Pa.

TRANSMITTERS, PRESSURE AND TEMPERATURE

Automatic Timing & Controls, Inc., King of Prussia, Pa.
Barton Instrument Corp., Monterey Park, Calif.
Bristol Co., The, Waterbury, Conn.
Conoflow Corp., Subsidiary of Walworth Co., Philadelphia, Pa.
Fischer & Porter Co., Hatboro, Pa.
Foxboro Co., Foxboro, Mass.
Giannini & Co., Inc., G. M., Pasadena, Calif.
Hagan Chemicals & Controls, Inc., Pittsburgh, Pa.
Manning, Maxwell & Moore, Inc., Stratford, Conn.
Mason-Neilan Div of Worthington Corp., Norwood, Mass.
Minneapolis-Honeywell Regulator Co., Industrial Div., Philadelphia, Pa.
Moore Products Co., Philadelphia, Pa.
Norwood Controls, A Unit of Detroit Controls, Norwood, Mass.
Penn Instruments Div. of Burgess-Manning Co., Philadelphia, Pa.
Taylor Instrument Companies, Rochester, N. Y.
Trerice Co., H. O., Detroit, Mich.
United States Gauge Div. of American Machine and Metals Inc., Sellersville, Pa.

TRAPS, MAGNETIC, FOR REMOVING TRAMP IRON FROM PIPE LINES

Columbia Engineering Service Co., Santa Rosa, Calif.
Dings Magnetic Separator Co., Milwaukee
Ladish Co., Tri-Clover Div., Kenosha, Wis.
Zurn Industries, Inc., Erie, Pa.

TRAPS, STEAM, FLOAT-THERMOSTATIC

Armstrong Machine Wks., Three Rivers, Mich.
Bailey Co., Chas. M., San Francisco, Calif.
Barnes & Jones, Inc., Newtonville, Mass.
Cashin Co., W. D., Boston, Mass.
Clifford Mfg. Co., Div. of Standard-Thomson Corp., Waltham, Mass.
Cochrane Corp., Philadelphia, Pa.
Cryer Trap & Valve Div., Encor Corp., Belleville, N. J.
Davis Regulator Co., Chicago, Ill.
Dunham-Bush, Inc., West Hartford, Conn.
Haines Co., Inc., Wm. S., Div. Sellers Injector Corp., Philadelphia, Pa.
Hoffman Specialty Mfg. Corp., Indianapolis, Ind.
Illinois Engineering Products, American Air Filter Co., Inc., Louisville, Ky.
Marsh Heating Equipment Co., Skokie, Ill.
Monash-Younker Co., Inc., Chicago, Ill.
Nicholson & Co., W. H., Wilkes-Barre, Pa.
Owens & Co., Inc., Henry, Cranston, R. I.
Sarco Co., Inc., New York, N. Y.
Squires Co., C. E., The, Cleveland, O.
Sterling, Inc., Milwaukee, Wis.
Trane Co., LaCrosse, Wis.
Trerice Co., H. O., Detroit, Mich.
Velan Valve Corp., Plattsburgh, N. Y.
Vis-A-Plug, Inc., King of Prussia, Pa.
Webster & Co., Warren, Camden, N. J.
Wright-Austin Co., Detroit, Mich.

TRAPS, STEAM, LIFT

Clark Mfg. Co., Cleveland, O.
L. R. P. Corp., Liecester, N. Y.
Morehead Moisture Control, Detroit, Mich.
Sarco Co., Inc., New York, N. Y.
Squires Co., C. E., The, Cleveland, O.
Sterling Engineering & Mfg. Corp., Hyde Park, Mass.
Velan Valve Corp., Plattsburgh, N. Y.

TRAPS, STEAM, MECHANICAL

Acker Corp., Meridian, Miss.
Anderson Co., V. D., The, Div. of International Basic Economy Corp., Cleveland, O.
Armstrong Machine Wks., Three Rivers, Mich.
Bailey Co., Chas. M., San Francisco, Calif.
Boylston Steam Specialty Co., Chicago, Ill.
Burrows Mfg. Co., F. A., York, Pa.
Cashin Co., W. D., Boston, Mass.
Clark Mfg. Co., Cleveland, O.
Cochrane Corp., Philadelphia, Pa.
Coe Mfg. Co., Painesville, O.
Crane Co., Chicago, Ill.
Cryer Trap & Valve Div., Encor Corp., Belleville, N. J.
Davis Engineering Corp., Elizabeth, N. J.
Haines Co., Inc., Wm. S., Div. Sellers Injector Corp., Philadelphia, Pa.
Hoffman Specialty Mfg. Corp., Indianapolis, Ind.
Illinois Engineering Products, American Air Filter Co., Inc., Louisville, Ky.
Kaye & MacDonald, Inc., West Orange, N. J.
Leavitt Machine Co., Orange, Mass.
Marsh Heating Equipment Co., Skokie, Ill.
McAlear Mfg. Co., Chicago, Ill.
McAuley Trap Co., Pittsburgh, Pa.
Monash-Younker Co., Inc., Chicago, Ill.
Morehead Moisture Control, Detroit, Mich.
Nason Co., Clarkston, Mich.
Nicholson & Co., W. H., Wilkes-Barre, Pa.
Perfecting Service Co., Charlotte, N. C.
Sarco Co., Inc., New York, N. Y.
Schaub Engineering Co., Fred H., Chicago, Ill.
Squires Co., C. E., The, Cleveland, O.
Sterling, Inc., Milwaukee, Wis.

Sterling Engineering & Mfg. Corp., Hyde Park, Mass.
Stickle Steam Specialties Co., Indianapolis, Ind.
Strong, Carlisle & Hammond, Cleveland, O.
Trane Co., The, LaCrosse, Wis.
Trerice Co., H. O., Detroit, Mich.
Vapor Heating Corp., Chicago, Ill.
Vis-A-Plug, Inc., King of Prussia, Pa. (bucket only)
Watson & McDaniel Co., Philadelphia, Pa.
Webster & Co., Warren, Camden, N. J.
Williams Gauge Co., Inc., The, Pittsburgh, Pa.
Wright-Austin Co., Detroit, Mich.
Yarnall-Waring Co., Philadelphia, Pa.

TRAPS, STEAM, PUMPING

Clark Mfg. Co., Cleveland, O.
Johnson Corp., The, Three Rivers, Mich.
Sarco Co., Inc., New York, N. Y.
Squires Co., C. E., The, Cleveland, O.
Sterling Engineering & Mfg. Corp., Hyde Park, Mass.

TRAPS, STEAM, RADIATOR

Dunham-Bush, Inc., West Hartford, Conn.
Hoffman Specialty Mfg. Corp., Indianapolis.
Marsh Heating Equipment Co., Skokie, Ill.
Monash-Younker Co., Inc., Chicago, Ill.
Nicholson & Co., W. H., Wilkes-Barre, Pa.
Sarco Co., Inc., New York, N. Y.
Squires Co., C. E., The, Cleveland, O.
Sterling, Inc., Milwaukee, Wis.
Trerice Co., H. O., Detroit, Mich.
Velan Valve Corp., Plattsburgh, N. Y.

TRAPS, STEAM, THERMOSTATIC

Anderson Co., V. D., The, Div. of International Basic Economy Corp., Cleveland, O.
Barnes & Jones, Inc., Newtonville, Mass.
Cashin Co., W. D., Boston, Mass.
Clark Mfg. Co., Cleveland, O.
Cryer Trap & Valve Div., Encor Corp., Belleville, N. J.
Dunham-Bush, Inc., West Hartford, Conn.
Haines Co., Inc., Wm. S., Div. Sellers Injector Corp., Philadelphia, Pa.
Hoffman Specialty Mfg. Corp., Indianapolis, Ind.
Illinois Engineering Products, American Air Filter Co,, Inc., Louisville, Ky.
Marsh Heating Equipment Co., Skokie, Ill.
McAlear Mfg. Co., Chicago, Ill.
Monash-Younker Co., Inc., Chicago, Ill.
Nicholson & Co., W. H., Wilkes-Barre, Pa.
Powers Regulator Co., Skokie, Ill.
Sarco Co., Inc., New York, N. Y.
Squires Co., C. E., The, Cleveland, O.
Sterling, Inc., Milwaukee, Wis.
Sterling Engineering & Mfg. Corp., Hyde Park, Mass.
Strong,Carlisle & Hammond, Cleveland, O.
Trane Co., The, LaCrosse, Wis.
Trerice Co., H. O., Detroit, Mich.
Velan Valve Corp., Plattsburgh, N. Y.
Webster & Co. Warren, Camden, N. J.
Wright-Austin Co., Detroit, Mich.

TRAPS, WATER, FOR OIL TANKS

Clark Mfg. Co., Cleveland, O.
Squires Co., C. E., The, Cleveland, O.

TREATMENT, CHEMICAL, TO REMOVE SCALE

Acme Chemical Co., Milwaukee, Wis.
Allen Co., Robert G., Mechanicsville, N. Y.
Ampion Corp., Long Island City, N. Y.
Anderson Chemical Co., Inc., Macon, Ga.
Anderson-Stolz Corp., Kansas City, Mo.
Aquatrol Ferr-X Corp., Clifton, N. J.
Aquatrol Laboratories, Inc., Clifton, N. J.
Berna Corp., Garwood, N. J.
Calgon Co., Pittsburgh, Pa.
Dearborn Chemical Co., Chicago, Ill.
Dowell Div. of The Dow Chemical Co., Tulsa, Okla.
Hagan Chemicals & Controls, Inc., Pittsburgh, Pa.
Hall Laboratories, Pittsburgh, Pa.
Jeffrey Mfg. Co., Columbus, O.
Kisco Boiler & Engineering Co., St. Louis, Mo.
North American Mogul Products Co., The, Cleveland, O.
Oakite Products, Inc., New York, N. Y.
Pennsalt Chemicals Corp., Philadelphia, Pa.
Permutit Co., The, Div. of Pfaudler Permutit, Inc., New York, N. Y.
Perolin Co., Inc., The, New York, N. Y.
Salsbury Corp., Los Angeles, Calif.
Smith Chemical Co., E. W., La Puente, Calif.
Stewart-Hall Chemical Corp., Mt. Vernon, N. Y.

TREATMENT, FUEL OIL, TO PREVENT SLUDGE

Acme Chemical Co., Milwaukee, Wis.
Allen Co., Robert G., Mechanicsville, N. Y.
American Sand-Banum Co., Inc., Merrick, N. Y.
Ampion Corp., Long Island City, N. Y.
Anderson Chemical Co., Inc., Macon, Ga.
Anderson-Stolz Corp., Kansas City, Mo.
Bird-Archer Co., Philadelphia, Pa.
Black & White Chemical Co., New York, N. Y.
Dearborn Chemical Co., Chicago, Ill.
Drew & Co., Inc., E. F., New York, N. Y.
Eds-Wil Burner Corp., Chicago, Ill.
Elraco Engineering Co., Los Angeles, Calif.
Evis Mfg. Co., Chicago, Ill.
Hercules Chemical Co., Inc., New York, N. Y.
Magnus Chemical Co., Garwood, N. J.
Metropolitan Refining Co., Inc., Long Island City, N. Y.
Monsanto Chemical Co., St. Louis, Mo.
Montgomery Chemical Co., Jenkintown, Pa.
National Aluminate Corp., Chicago, Ill.
Norman Chemical Co., St. Paul, Minn.
North American Mogul Products Co., The, Cleveland, O.
Nutmeg Chemical Co., New Haven, Conn.
Perolin Co., Inc., New York, N. Y.
Petroleum Solvents Corp., New York, N. Y.
Proportioneers, Inc., Div. of B-I-F Industries, Inc., Providence, R. I.
Radiator Specialty Co., Charlotte, N. C.
S. O. S. Products Co., Inc., Brooklyn, N. Y.
Smith Chemical Co., E. W., La Puente, Calif.
Stewart-Hall Chemical Corp., Mt. Vernon, N. Y.
Sudbury Laboratory, South Sudbury, Mass.
Warren Refining & Chemical Co., The, Cleveland, O.

TREATMENT, STEAM SYSTEM, TO INHIBIT CORROSION

Acme Chemical Co., Milwaukee, Wis.
Allis-Chalmers Mfg. Co., Milwaukee, Wis.
American K. A. T. Corp., Subsidiary of Magnus Chemical Co., Inc., Garwood, N. J.
American Water Softener Co., Philadelphia, Pa.
American Well Wks., Aurora, Ill.
Ampion Corp., Long Island City, N. Y.
Anderson Chemical Co., Inc., Macon, Ga.
Anderson-Stolz Corp., Kansas City, Mo.
Aquatrol Ferr-X Corp., Clifton, N. J.
Aquatrol Laboratories, Inc., Clifton, N. J.
Berna Corp., Garwood, N. J.
Bird-Archer Co., Philadelphia, Pa.
Brown-Electro Co., Oklahoma City, Okla.
Calgon Co., Pittsburgh, Pa.
Cannon Chemical Co., Inc., Cambridge, Mass.
Chemical Solvent Co., Birmingham, Ala.
Cochrane Corp., Philadelphia, Pa.
Continental Products Co., Euclid, O.
Dearborn Chemical Co., Chicago, Ill.
Drew & Co., Inc., E. F., New York, N. Y.
Elgin Softener Corp., Elgin, Ill.
Elraco Engineering Co., Los Angeles, Calif.
Graver Water Conditioning Co., New York, N. Y.
Hagan Chemicals & Controls, Inc., Pittsburgh, Pa.
Hall Laboratories, Pittsburgh, Pa.
Heller Laboratories, Inc., Leonia, N. J.
Hercules Chemical Co., Inc., New York, N. Y.
Kenite Laboratory, Madison, N. J.
Magnus Chemical Co., Garwood, N. J.
Metropolitan Refining Co., Inc., Long Island City, N. Y.
Milton Roy Co., Philadelphia, Pa.
National Aluminate Corp., Chicago, Ill.
North American Mogul Products Co., The, Cleveland, O.
Packard Mfg. Co., Jacksonville, Fla.
Perolin Co., Inc., New York, N. Y.
Proportioneers, Inc., Div. of B-I-F Industries, Inc. Providence, R. I.
S. O. S. Products Co., Inc., Brooklyn, N. Y.
Saverite Engineering Co., Hoboken, N. J.
Smith Chemical Co., E. W., La Puente, Calif.
Stiles Karlsonite Corp., Waukegan, Ill.
Strong, Carlisle & Hammond, Cleveland, O.
Sulflo, Inc., Elizabeth, N. J.
Turco Products, Inc., Los Angeles, Calif.
Union Carbide Chemicals Co., Div. of Union Carbide Corp., New York, N. Y.
Warren Refining & Chemical Co., Cleveland, O.
Water Treatment Co. of America, Pittsburgh, Pa.
X Laboratories, Inc., New York, N. Y.

TREATMENT, WATER, TO INHIBIT CORROSION

Acme Chemical Co., Milwaukee, Wis.
Agava Products, Inc., Jersey City, N. J.
Allis-Chalmers Mfg. Co., Milwaukee, Wis.
American Sand-Banum Co., Inc., Merrick, N. Y.
American Water Softener Co., Philadelphia, Pa.
American Well Works, Aurora, Ill.
Ampion Corp., Long Island City, N. Y.
Anderson Chemical Co., Inc., Macon, Ga.
Anderson-Stolz Corp., Kansas City, Mo.
Aquatrol Ferr-X Corp., Clifton, N. J.
Aquatrol Laboratories, Inc., Clifton, N. J.
Berna Corp., Garwood, N. J.
Bird-Archer Co., Philadelphia, Pa.
Brown Electro Co., Oklahoma City, Okla.
Calgon Co., Pittsburgh, Pa.
Cannon Chemical Co., Inc., Cambridge, Mass.
Cepi-American, Inc., River Forest, Ill.
Chemical Solvent Co., Birmingham, Ala.
Clayton Mfg. Co., El Monte, Calif.
Cochrane Corp., Philadelphia, Pa.
Culligan, Inc., Northbrook, Ill.
Dearborn Chemical Co., Chicago, Ill.
Drew & Co., Inc., E. F., New York, N. Y.
Electro Rust-Proofing Corp., Belleville, N. J.
Electro Tool Corp., Houston, Tex.
Elgin Softener Corp., Elgin, Ill.
Elraco Engineering Co., Los Angeles, Calif.
Fischer & Porter Co., Hatboro, Pa.
Garman Co., Inc., The, St. Louis, Mo.
Graver Water Conditioning Co., New York, N. Y.
Hagan Chemicals & Controls, Inc., Pittsburgh, Pa.
Hall Laboratories, Pittsburgh, Pa.
Heller Laboratories, Inc., Leonia, N. J.
Hungerford & Terry, Inc., Clayton, N. J.
Industrial Filter & Pump Co., Chicago, Ill.
Kisco Boiler & Engineering Co., St. Louis, Mo.
Layne & Bowler, Inc., Memphis, Tenn.
Magnus Chemical Co., Garwood, N. J.
McMillan Industrial Supplies, C. C., Portland, Ore.
Metropolitan Refining Co., Inc., Long Island City, N. Y.
Milton Roy Co., Philadelphia, Pa.
Monsanto Chemical Co., St. Louis, Mo.
Moreheat Distribution, Inc., Cincinnati, O.
Narda Ultrasonics Corp., Westbury, Long Island, N. Y.
National Aluminate Corp., Chicago, Ill.
North American Mogul Products Co., The, Cleveland, O.
Oakite Products, Inc., New York, N. Y.
Olin Mathieson Chemical Corp., Chemicals Div., Baltimore, Md.
Oshkosh Filter & Softener Co., Oshkosh, Wis.
Pacific Lumber Co., The, San Francisco, Calif.
Permutit Co., Div. of Pfaudler Permutit, Inc., New York, N. Y.
Perolin Co., Inc., New York, N. Y.
Proportioneers, Inc., Div. of B-I-F Industries, Inc., Providence, R. I.
Reynolds Water Conditioning Co., Detroit, Mich.
S. O. S. Products Co., Inc., Brooklyn, N. Y.
Salsbury Corp., Los Angeles, Calif.
Saverite Engineering Co., Hoboken, N. J.
Smith Chemical Co., E. W., La Puente, Calif.
Stewart-Hall Chemical Corp., Mt. Vernon, N. Y.
Stiles Karlsonite Corp., Waukegan, Ill.
Strong, Carlisle & Hammond, Cleveland, O.
Sudbury Laboratory, South Sudbury, Mass.
Sulflo, Inc., Elizabeth, N. J.
Turco Products, Inc., Los Angeles, Calif.
Uniflow Mfg. Co., Erie, Pa.

Union Carbide Chemicals Co., Div. of Union Carbide Corp., New York, N. Y.
Virginia Smelting Co., West Norfolk, Va.
Wallace & Tiernan, Inc., Belleville, N. J.
Water Service Laboratories, Inc., New York, N. Y.
Water Treatment Company of America, Pittsburgh, Pa.
Wyandotte Chemical Co., Wyandotte, Mich.
X Laboratories, Inc., New York, N. Y.

TREATMENT, WATER, TO PREVENT SCALE FORMATION

Acme Chemical Co., Milwaukee, Wis.
Agava Products, Inc., Jersey City, N. J.
Allis-Chalmers Mfg. Co., Milwaukee, Wis.
American Sand-Banum Co., Inc., Merrick, N. Y.
American Water Softener Co., Philadelphia.
Ampion Corp., Long Island City, N. Y.
Anderson Chemical Co., Inc., Macon, Ga.
Anderson-Stolz Corp., Kansas City, Mo.
Aqua Electric Scale Control, Inc., Cleveland, O.
Aquatrol Ferr-X Corp., Clifton, N. J.
Aquatrol Laboratories, Inc., Clifton, N. J.
Bird-Archer Co., Philadelphia, Pa.
Brown-Electro Co., Oklahoma City, Okla.
Calgon Co., Pittsburgh, Pa.
Cepi-American, Inc., River Forest, Ill.
Chemical Solvent Co., Birmingham, Ala.
Clayton Mfg. Co., El Monte, Calif.
Cochrane Corp., Philadelphia, Pa.
Culligan, Inc., Northbrook, Ill.
Dearborn Chemical Co., Chicago, Ill.
Drew & Co., Inc., E. F., New York, N. Y.
Electro Tool Corp., Houston, Tex.
Elraco Engineering Co., Los Angeles, Calif.
Evis Mfg. Co., Chicago, Ill.
Garman Co., Inc., The, St. Louis, Mo.
Graver Water Conditioning Co., New York, N. Y.
Hagan Chemicals & Controls, Inc., Pittsburgh, Pa.
Hall Laboratories, Pittsburgh, Pa.
Heller Laboratories, Inc., Leonia, N. J.
Hungerford & Terry, Inc., Clayton, N. J.
Illinois Water Treatment Co., Rockford, Ill.
Imperial Chemicals Corp., Los Angeles, Calif.
Kisco Boiler & Engineering Co., St. Louis, Mo.
Magnus Chemical Co., Garwood, N. J.
McMillan Industrial Supplies, C. C., Portland, Ore.
Metropolitan Refining Co., Inc., Long Island City, N. Y.
Milton Roy Co., Philadelphia, Pa.
Narda Ultrasonics Corp., Westbury, Long Island, N. Y.
National Aluminate Corp., Chicago, Ill.
North American Mogul Products Co., The, Cleveland, O.
Oakite Products, Inc., New York, N. Y.
Oshkosh Filter & Softener Co., Oshkosh, Wis.
Pacific Lumber Co., The, San Francisco, Calif.
Packard Water Conditioners, Inc., Jacksonville, Fla.
Permutit Co., Div. of Pfaudler Permutit, Inc., New York, N. Y.
Perolin Co., Inc., The, New York, N. Y.
Reynolds Water Conditioning Co., Detroit, Mich.
S. O. S. Products Co., Inc., Brooklyn, N. Y.
Smith Chemical Co., E. W., La Puente, Calif.
Stewart-Hall Chemical Corp., Mt. Vernon, N. Y.
Stiles Karlsonite Corp., Waukegan, Ill.
Strong, Carlisle & Hammond, Cleveland, O.
Uniflow Mfg. Co., Erie, Pa.
Union Carbide Chemicals Co., Div. of Union Carbide Corp., New York, N. Y.
Virginia Smelting Co., West Norfolk, Va.
Water Service Laboratories, Inc., New York, N. Y.
Water Treatment Co. of America, Pittsburgh, Pa.
X Laboratories, Inc., New York, N. Y.

TREATMENT, WATER, FOR SLIME AND ALGAE CONTROL

Acme Chemical Co., Milwaukee, Wis.
Agava Products Inc., Jersey City, N. J.
Allis-Chalmers Mfg. Co., Milwaukee, Wis.
American Water Softener Co., Philadelphia, Pa.
American Well Works, Aurora, Ill.
Ampion Corp., Long Island City, N. Y.
Anderson Chemical Co., Inc., Macon, Ga.
Anderson-Stolz Corp., Kansas City, Mo.
Aquatrol Ferr-X Corp., Clifton, N. J.
Aquatrol Laboratories, Inc., Clifton, N. J.
Berna Corp., Garwood, N. J.
Bird-Archer Co., Philadelphia, Pa.
Builders Providence Div., B-I-F Industries, Inc., Providence, R. I.
Calgon Co., Pittsburgh, Pa.
Carolina Aniline & Extract Co., Charlotte, N. C.
Chemical Solvent Co., Birmingham, Ala.
Dearborn Chemical Co., Chicago, Ill.
Dow Chemical Co., The, Midland, Mich.
Drew & Co., Inc., E. F., New York, N. Y.
Elraco Engineering Co., Los Angeles, Calif.
Filtrine Mfg. Co., Inc., Waldwick, N. J.
Fischer & Porter Co., Hatboro, Pa.
Garman Co., Inc., The, St. Louis, Mo.
Graver Water Conditioning Co., New York, N. Y.
Hagan Chemicals & Controls, Inc., Pittsburgh, Pa.
Hall Laboratories, Pittsburgh, Pa.
Hanovia Lamp Div., Engelhard Industries, Inc., Newark, N. J. (ultraviolet)
Heller Laboratories, Inc., Leonia, N. J.
Hungerford & Terry, Inc., Clayton, N. J.
Imperial Chemicals Corp., Los Angeles, Calif.
Infilco, Inc., Tucson, Ariz.
Jeffrey Mfg. Co., Columbus, O.
Layne & Bowler, Inc., Memphis, Tenn.
Magnus Chemical Co., Garwood, N. J.
Metal & Thermit Corp., Rahway, N. J.
Metropolitan Refining Co., Inc., Long Island City, N. Y.
Milton Roy Co., Philadelphia, Pa.
Monsanto Chemical Co., St. Louis, Mo.
National Aluminate Corp., Chicago, Ill.
North American Mogul Products Co., The, Cleveland, O.
Norwood Associated Engineers, Inc., Springfield, Mass.
Oakite Products, Inc., New York, N. Y.
Olin Mathieson Chemical Corp., Chemicals Div., Baltimore, Md.
Pacific Lumber Co., The, San Francisco, Calif.
Permutit Co., Div. of Pfaudler Permutit, Inc., New York, N. Y.
Pennsalt Chemicals Corp., Philadelphia, Pa.
Perolin Co., Inc., New York, N. Y.
Proportioneers, Inc., Div. of B-I-F Industries, Inc., Providence, R. I.
Sherwood Water Treatment Co., Inc., Beverly, N. J.
Smith Chemical Co., E. W., La Puente, Calif.
Solvay Process Div., Allied Chemical Corp., New York, N. Y.
Steelcote Mfg. Co., St. Louis, Mo.
Stewart-Hall Chemical Corp., Mt. Vernon, N. Y.
Stiles Karlsonite Corp., Waukegan, Ill.
Strong, Carlisle & Hammond, Cleveland, O.
Uniflow Mfg. Co., Erie, Pa.
Union Carbide Chemicals Co., Div. of Union Carbide Corp., New York, N. Y.
Virginia Smelting Co., West Norfolk, Va.
Wallace & Tiernan, Inc., Belleville, N. J.
Water Service Laboratories, Inc., New York, N. Y.
Water Treatment Co. of America, Pittsburgh, Pa.

TRENCHING MACHINES FOR PIPE LINES

See Machines, Trenching for Pipe Lines

TRUCKS, LIFT

American Pulley Co., The, Philadelphia, Pa.
Buda Div., The, Allis-Chalmers Mfg. Co., Harvey, Ill.
Thern Machine Co., Winona, Minn.

TRY-COCKS, BOILER

Crane Co., Chicago, Ill.
Diamond Power Specialty Corp., Lancaster, O.
Ernst Water Column & Gauge Co., Livingston, N. J.
Huyette Co., Inc., Paul B., Philadelphia, Pa.
Keckley Co., O. C., Skokie, Ill.
Lunkenheimer Co., Cincinnati, O.
New York Air Valve Corp., Brooklyn, N. Y.
Penberthy Mfg. Co., Div. of Buffalo Eclipse Corp., Detroit, Mich.
Reliance Gauge Column Co., Cleveland, O.
Swift Lubricator Co., Inc., Elmira, N. Y.

TUBE CLEANERS

See Cleaners, Tube

TUBE FINNING MACHINES

See Machines, Tube Finning

TUBES, BOILER

Babcock & Wilcox Co., Tubular Products Div., Beaver Falls, Pa.
Bethlehem Steel Co., Bethlehem, Pa.
Brass & Copper Imports, Inc., Minneapolis, Minn.
Bridgeport Brass Co., Bridgeport, Conn.
Central Steel & Wire Co., Chicago, Ill.
Chase Brass & Copper Co., Waterbury, Conn.
Condenser Service & Engineering Co., Inc., Hoboken, N. J.
Crucible Steel Co. of America, Pittsburgh, Pa.
H & H Tube & Mfg. Co., Detroit, Mich.
Jones & Laughlin Steel Corp., Pittsburgh, Pa.
National Tube Div., United States Steel Corp., Pittsburgh, Pa.
Pittsburgh Steel Co., Pittsburgh, Pa.
Republic Steel Corp., Cleveland, O.
Sawhill Tubular Products, Inc., Sharon, Pa.
Standard Tube Co., Detroit, Mich.
Trent Tube Co., East Troy, Wis. (stainless)

TUBES, CONDENSER

American Brass Co., Waterbury, Conn.
Ampco Metal, Inc., Milwaukee, Wis.
Babcock & Wilcox Co., Tubular Products Div., Beaver Falls, Pa.
Bethlehem Steel Co., Bethlehem, Pa.
Brass & Copper Imports, Inc., Minneapolis, Minn.
Bridgeport Brass Co., Bridgeport, Conn.
Bundy Tubing Co., Detroit, Mich.
Byers Co., A. M., Pittsburgh, Pa. (cold drawn wrought iron)
Carpenter Steel Co., Alloy Tube Div., Union, N. J.
Chase Brass & Copper Co., Waterbury, Conn.
Clayton Mark & Co., Evanston, Ill.
Condenser Service & Engineering Co., Inc., Hoboken, N. J.
Crucible Steel Co. of America, Pittsburgh, Pa.
Damascus Tube Co., Greenville, Pa.
Edwards Engineering Corp., Pompton Plains, N. J.
Jones & Laughlin Steel Corp., Pittsburgh, Pa.
Lewin-Mathes Co., Div. of Cerro de Pasco Corp., St. Louis, Mo.
National Tube Div., United States Steel Corp., Pittsburgh, Pa.
Pacific Tube Co., Los Angeles, Calif.
Penn Brass & Copper Co., Erie, Pa.
Phelps Dodge Copper Products Corp., New York, N. Y.
Pittsburgh Steel Co., Pittsburgh, Pa.
Republic Steel Corp., Cleveland, O.
Revere Copper and Brass Inc., New York, N. Y.
Reynolds Metals Co., Richmond, Va.
Roberts Tube Div., Prestyle Mfg. Co., Detroit, Mich.
Sawhill Tubular Products, Inc., Sharon, Pa.
Scovill Mfg Co., Waterbury, Conn. (copper base)
Standard Tube Co., Detroit, Mich.
Trent Tube Co., East Troy, Wis. (stainless)
Wolverine Tube, Div. of Calumet & Hecla, Inc., Allen Park, Mich.

TUBES, PITOT

Aerotech Specialties, Inc., Glastonbury, Conn.
Defender Instrument and Regulator Co., Boody, Ill.
Dwyer Mfg. Co., F. W., Michigan City, Ind.
Ellison Draft Gage Co., Chicago, Ill.
Foxboro Co., Foxboro, Mass.
Giannini & Co., Inc., G. M., Pasadena, Calif.
Hill & Co., E. Vernon, Lake Geneva, Wis.
Meriam Instrument Co., The, Cleveland, O.
Simplex Valve & Meter Co., Lancaster, Pa.
Taylor Instrument Companies, Rochester, N. Y.
Trimount Instrument Co., Chicago, Ill.

TUBING, ALUMINUM

Aluminum Co. of America, Pittsburgh, Pa.
American Brass Co., Waterbury, Conn.
Bohn Aluminum & Brass Corp., Detroit, Mich.
Brass & Copper Imports, Inc., Minneapolis, Minn.
Bridgeport Brass Co., Bridgeport, Conn.

Central Steel & Wire Co., Chicago, Ill.
Channel Master Corp., Ellenville, N. Y.
Federal-Mogul Div., Federal-Mogul-Bower Bearings, Inc., Detroit, Mich.
H & H Tube & Mfg. Co., Detroit, Mich.
Harvey Aluminum, Torrance, Calif.
Kaiser Aluminum & Chemical Sales, Inc., Chicago, Ill.
Penn Brass & Copper Co., Erie, Pa.
Revere Copper and Brass Inc., New York, N. Y.
Reynolds Metals Co., Richmond, Va.
Roll-Weld Pipe & Tube, Inc., Jacksonville, Fla.
Ryerson & Son, Inc., Joseph T., Chicago, Ill.
Sawhill Tubular Products, Inc., Sharon, Pa.
Swepco Tube Corp., Clifton, N. J.
United Wire & Supply Corp., Cranston, R. I.
Wolverine Tube, Div. of Calumet & Hecla, Inc., Allen Park, Mich.
Youngstown Welding & Engineering Co., Youngstown, O.

TUBING BENDERS

See Benders, Tubing

TUBING, BRASS AND COPPER

American Brass Co., Waterbury, Conn.
Brass & Copper Imports, Inc., Minneapolis, Minn.
Bridgeport Brass Co., Bridgeport, Conn.
Central Steel & Wire Co., Chicago, Ill.
Chase Brass & Copper Co., Waterbury, Conn.
Gardiner Metal Co., Chicago, Ill.
H & H Tube & Mfg. Co., Detroit, Mich.
Hussey & Co., C. G., Div. of Copper Range Co., Pittsburgh, Pa.
Keeney Mfg. Co., Newington, Conn. (Chrome plated)
Kensico Tube Co., Mt. Kisco, N. Y.
Lead Lined Iron Pipe Co., Wakefield, Mass. (lead covered)
Lewin-Mathes Co., Div. of Cerro de Pasco Corp., St. Louis, Mo.
Mueller Co., Decatur, Ill.
Mueller Brass Co., Port Huron, Mich.
Penn Brass & Copper Co., Erie, Pa.
Phelps Dodge Copper Products Corp., New York, N. Y.
Reading Tube Corp., New York, N. Y.
Revere Copper and Brass Inc., New York, N. Y.
Roberts Tube Div., Prestyle Mfg. Co., Detroit, Mich.
Superior Valve & Fittings Co., Pittsburgh, Pa.
Triangle Conduit & Cable Co., Inc., New Brunswick, N. J. (K-L-M)
United Wire & Supply Corp., Cranston, R. I.
Viking Copper Tube Co., Cleveland, O.
Wolverine Tube, Div. of Calumet & Hecla, Inc., Allen Park, Mich.
Young Regulator Co., Cleveland, O.

TUBING, BRONZE

American Brass Co., Waterbury, Conn.
Ampco Metal, Inc., Milwaukee, Wis.
Brass & Copper Imports, Inc., Minneapolis, Minn.
Bridgeport Brass Co., Bridgeport, Conn.
Chase Brass & Copper Co., Waterbury, Conn.
International Metal Hose Co., Bellevue, O.
Revere Copper and Brass Inc., New York, N. Y.

TUBING, CAPILLARY, FOR REFRIGERANTS

Allin Mfg. Co., Chicago, Ill.
American Brass Co., Waterbury, Conn.
American Metal Hose Div., American Brass Co., The, Waterbury, Conn.
Brass & Copper Imports, Inc., Minneapolis, Minn.
Bridgeport Brass Co., Bridgeport, Conn.
Kensico Tube Co., Mt. Kisco, N. Y.
Madden Brass Products Co., Aurora, Ill.
Penn Brass & Copper Co., Erie, Pa.
Reading Tube Corp., New York, N. Y.
Refrigeration Research, Inc., Brighton, Mich.
Revere Copper and Brass Inc., New York, N. Y.
Sawhill Tubular Products, Inc., Sharon, Pa.
Superior Tube Co., Norristown, Pa.
Techniflex Corp., Port Jervis, N. Y.
United Wire & Supply Corp., Cranston, R. I.
Wabash Corp., Chicago, Ill.
Wolverine Tube, Div. of Calumet & Hecla Inc., Allen Park, Mich.

TUBING, CONTROL, FOR INSTRUMENTATION

Nylon Moulding Corp., Garwood, N. J.
Okonite Co., The, Passaic, N. J.

TUBING CUTTERS

See Cutters, Tubing

TUBING, DUPLEX

American Metal Hose Div., American Brass Co., The, Waterbury, Conn. (metal)
American Brass Co., Waterbury, Conn. (copper/steel admiralty/ steel)
Bridgeport Brass Co., Bridgeport, Conn. (combinations of Admiralty aluminum brass, copper, capro nickel, brass, aluminum, nickel, steel, stainless steel, alloy steel, tin)
Phelps Dodge Copper Products Corp., New York, N. Y. (copper alloy)
Polymer Corp., The, Reading, Pa. (nylon)
Republic Steel Corp., Cleveland, O. (Steel and copper)
Uehling Instrument Co., Paterson, N. J.
Wolverine Tube, Div. of Calumet & Hecla Inc., Allen Park, Mich.

TUBING, FABRIC, FLEXIBLE

Arrowhead Products, Div. of Federal Mogul-Bower-Bearings, Inc., Long Beach, Calif.
Flexible Tubing Corp., Guilford, Conn.
Johns-Manville, New York, N. Y.

TUBING, FINNED

Alco Products, Inc., Schenectady, N. Y.
Bridgeport Brass Co., Bridgeport, Conn.
Brown Fintube Co., Elyria, O.
Carpenter Steel Co., Alloy Tube Div., Union, N. J.
Chase Brass & Coper Co., Waterbury, Conn. (spiral wound, copper)
Drayer-Hanson, Div. of National-U. S. Radiator Corp., Los Angeles, Calif.
Dunham-Bush, Inc., West Hartford, Conn.
Edwards Engineering Corp., Pompton Plains, N. J.
F5 Air Conditioning Corp., Tulsa, Okla.
G. & O. Mfg. Co., New Haven, Conn.
Griscom-Russell Co., The, Massillon, O.
Heat Transfer Products, Inc., Perkasie, Pa.
Heat-X, Inc., Subsidiary of Dunham-Bush, Inc., West Hartford, Conn.
Heatron, Inc., York, Pa.
Kramer Trenton Co., Trenton, N. J.
Kritzer Radiant Coils, Inc., Batavia, Ill.
Lewis & Saunders, Lakeport, N. H.
McCord Corp., Detroit, Mich.
Merchant & Evans Co., Philadelphia, Pa.
National Tube Div., United States Steel Corp., Pittsburgh, Pa.
Peerless of America, Inc., Chicago, Ill.
Reading Tube Corp., New York, N. Y.
Recoy Div. of Schemenauer Mfg. Corp., Holland, O.
Rempe Co., Chicago, Ill.
Revere Copper & Brass, Inc., New York.
Rittling Corp., The, Buffalo, N. Y.
Rome-Turney Radiator Co., Rome, N. Y.
Sawhill Tubular Products, Inc., Sharon, Pa.
Schemenauer Mfg. Corp., Holland, O.
Schutte and Koerting Co., Cornwells Heights, Bucks County, Pa.
Tenney Engineering, Inc., Union, N. J.
Trane Co., The, La Crosse, Wis.
Typhoon Air Conditioning Co., Div. of Hupp Corp., Brooklyn, N. Y.
United Machinery Sales Co., Chicago, Ill.
United Wire & Supply Corp., Cranston, R. I.
Vapor Heating Corp., Chicago, Ill.
Vulcan Radiator Co., Hartford, Conn.
Wall Tube & Metal Products Co., Newport, Tenn.
Wolverine Tube, Div. of Calumet and Hecla Inc., Allen Park, Mich. (Aluminum, copper)

TUBING, MAGNESIUM

Dow Chemical Co., The, Midland, Mich.

TUBING, METAL, FLEXIBLE

American Brass Co., Waterbury, Conn.
American Metal Hose Div., American Brass Co., The, Waterbury, Conn.
Arrowhead Products, Div. of Federal-Mogul-Bower Bearings, Inc., Long Beach, Calif.
Atlantic Metal Hose Co., Inc., New York.
Cobra Metal Hose Div., D-K Mfg. Co., Chicago, Ill.
Crescent Insulated Wire & Cable Co., Trenton, N. J. (cabled)
Flexaust Co., New York, N. Y.
Flexonics Corp., Maywood, Ill.
International Metal Hose Co., Bellevue, O.
Johnson Metal Hose, Inc., Waterbury, Conn.
Marquette Coppersmithing Co., Philadelphia.
National Lead Co., New York, N. Y.
Packless Metal Hose, Inc., Mt. Vernon, N. Y.
Pennsylvania Flexible Metallic Tubing Co., Philadelphia, Pa.
Titeflex, Inc., East Springfield, Mass.
U. S. Flexible Metallic Tubing Co., Los Angeles, Calif.
United Metal Hose Co., Inc., Long Island City, N. Y.
Universal Metal Hose Co., Chicago, Ill.

TUBING, NICKEL AND NICKEL ALLOY

Babcock & Wilcox Co., Tubular Products Div., Beaver Falls, Pa.
Bart Mfg. Corp., Belleville, N. J.
Bridgeport Brass Co., Bridgeport, Conn.
Bundy Tubing Co., Detroit, Mich.
Chase Brass & Copper Co., Waterbury, Conn.
Damascus Tube Co., Greenville, Pa.
Electric Steel Foundry Co., Portland, Ore.
General Plate Div., Metals & Controls Corp., Attleboro, Mass.
Greenville Tubes, Inc., Greenville, Pa.
Haynes Stellite Co., Div. of Union Carbide Corp., New York, N. Y.
International Nickel Co., Inc., The, New York, N. Y.
National Tube Div., United States Steel Corp., Pittsburgh, Pa.
Pittsburgh Steel Co., Pittsburgh, Pa.
Revere Copper & Brass, Inc., New York.
Sawhill Tubular Products, Inc., Sharon, Pa.
Superior Tube Co., Norristown, Pa.
Swepco Tube Corp., Clifton, N. J.
Titeflex, Inc., East Springfield, Mass.
Trent Tube Co., East Troy, Wis.
United Wire & Supply Corp., Cranston, R. I.
Wolverine Tube, Div. of Calumet and Hecla, Inc., Allen Park, Mich.
Youngstown Welding & Engineering Co., Youngstown, O.

TUBING, NICKEL PLATED

Bart Mfg. Corp., Belleville, N. J.
Nikoh Tube Co., Chicago, Ill.

TUBING, PLASTIC

Alpha Plastics, Inc., Livingston, N. J. (PVC)
Amercoat Corp., South Gate, California. (rigid epoxy, 550 psi, @ 130 F)
American Agile Corp., Bedford, O. (flexible)
American Hard Rubber Co., Div. of Amerace Corp., Butler, N. J.
American Metal Hose Div., American Brass Co., The, Waterbury, Conn. (teflon)
Anesite Co., Chicago, Ill. (polyethylene, butyrate, kralastic, rigid PVC)
Argo Plastic Products, Cleveland, O. (polyethylene, normal and linear, clear vinyl)
Carlon Products Corp., Cleveland, O.
Chicago Gasket Co., Chicago, Ill.
Commercial Plastics Co., Chicago, Ill.
Continental Can Co., Millsplastic Pipe Div., New York, N. Y.
Continental-Diamond Fibre Corp., Newark, Del.
Crane Co., Chicago, Ill. (polyethylene)
Crescent Insulated Wire & Cable Co., Trenton, N. J. (polyethylene)
Crescent Plastics, Inc., Evansville, Ind. (flexible)
Danielson Mfg. Co., Danielson, Conn. (nylon)
Devices, Inc., A Div. of Miracle Adhesives Corp., Bellmore, N. Y. (polyvinyl)
Dow Chemical Co., The, Midland, Mich. (saran-lined)
Extruded Plastics, Inc., Norwalk, Conn.
Fibercast Co., Sand Spring, Okla.
Flexible Tubing Corp., Guilford, Conn.
Flexrock Co., Philadelphia, Pa.
Garlock Packing Co., Palmyra, N. Y. (teflon)
Gates Rubber Co., The, Denver, Colo.
General Electric Co., Laminated Products Dept., Coshocton, O. (laminated)

Goodrich Industrial Products Co., B. F., Akron, O. (flexible and rigid)
Goodrich Industrial Products Co., B. F., Koroseal Div., Marietta, O. (PVC; flexible)
Goodyear Tire & Rubber Co., Akron, O.
Hamilton Rubber Mfg. Corp., Trenton, N. J.
Haveg Industries, Inc., Wilmington, Del. (teflon)
Hudson Industries, Inc., Detroit, Mich.
Imperial Brass Mfg. Co., Chicago, Ill. (polyethylene and nylon)
Industrial Plastic Fabricators, Norwood, Mass. (PVC)
Irvington Div., Minnesota Mining & Mfg. Co., Irvington, N. J.
Jaco Mfg. Co., Cleveland, O.
Jarrow Products, Chicago, Ill. (vinyl plastic)
LaFavorite Rubber Mfg. Co., Hawthorne, N. J. (rigid, PVC)
Luzerne Rubber Co., Trenton, N. J. (rigid PVC)
Manufacturers Corp., Mansfield, O.
Moore & Co., Samuel, Mantua, O. (polyethylene)
Mueller Brass Co., Port Huron, Mich. (polyethylene and PVC)
Munray Products Div. of Fanner Mfg. Co., Cleveland, O. (polyethylene, vinyl)
National Tube Div., United States Steel Corp., Pittsburgh, Pa. (polyethylene flexible polyvinyl chloride rigid)
Nylon Moulding Corp., Garwood, N. J. (nylon)
Pacific States Felt & Mfg. Co., Inc., San Francisco, Calif. (fibre and bakelite and sponge rubber)
Plastipipe, Products of Plastic Process Co., Div. of Monadnock Mills, Los Angeles, Calif. (butyrate; polyethylene; acrylic; PVC; rigid; flexible PVC; cycolac; kralastic; nylon; styrene)
Polygon Plastic Co., Walkerton, Ind.
Polymer Corp., The, Reading, Pa. (Nylon)
Pyramid Plastics, Inc., Chicago, Ill. (saran)
Reflin Co., San Diego, Calif. (rigid, reinforced with glass fibers)
Republic Rubber Div., **Lee Rubber & Tire Corp., Youngstown, O. (Vinyl)**
Resistoflex Corp., Roseland, N. J.
Ryerson & Son, Inc., Joseph T., Chicago, Ill. (PVC)
Sandee Mfg. Co. Chicago, Ill. (all thermoplastic)
Saran Lined Pipe Co., Ferndale, Mich. (saran)
Skyline Industries Sales, Inc., Titusville, Pa. (polyethylene)
Southern Plastics Co., Columbia, S. C. (rigid, non-rigid)
Southwestern Plastic Pipe Co., Mineral Wells, Tex. (polyethylene and butyrate)
Titeflex, Inc., East Springfield, Mass. (Teflon)
Triangle Conduit & Cable Co., Inc., New Brunswick, N. J. (flexible polyethylene, semi-rigid, rigid high impact)
Uehling Instrument Co., Paterson, N. J.
United States Gasket Co., Camden, N. J. (nylon, teflon)
United States Rubber Co., New York, N. Y. (extruded)
United States Stoneware Co., New York.
United States Stoneware Co., Plastics & Synthetics Div., Akron, O.
Vanton Pump & Equipment Corp., Hillside, N. J. (vinyl-Polethylene)
Western Plastics Corp., Tacoma, Wash. (polyethylene)
Yardley Plastics Co., Columbus, O. (polyethylene, black and natural)
Youngstown Sheet & Tube Co., Youngstown, O. (rigid)

TUBING, RUBBER

Continental Rubber Wks., Erie, Pa.
Garlock Packing Co., Palmyra, N. Y.
General Tire & Rubber Co., Industrial Products Div., Wabash, Ind.
Goodrich Industrial Products Co., B. F., Akron, O.
Goodyear Tire & Rubber Co., Akron, O.
Hamilton Rubber Mfg. Corp., Trenton, N. J.
Hewitt-Robins, Inc., Stamford, Conn.
Jarrow Products, Chicago, Ill. (sponge)
LaFavorite Rubber Mfg. Co., Hawthorne, N. J.
Luzerne Rubber Co., Trenton, N. J. (hard rubber)
Mercer Rubber Co., Hamilton Sq., N. J.
Nazar Rubber Co., Toledo, O.
Raybestos-Manhattan, Inc., Passaic, N. J.
Rubatex Div., Great American Industries, Inc., Bedford, Va.
United States Rubber Co., New York, N. Y. (extruded)

TUBING, SILVER CLAD AND SILVER ALLOY

American Platinum & Silver Div., Engelhard Industries, Inc., Newark, N. J.
General Plate Div., Metals & Controls Corp., Attleboro, Mass.
Handy & Harman, New York, N. Y.

TUBING, STEEL, ALLOY, SEAMLESS

Babcock & Wilcox Co., Tubular Products Div., Beaver Falls, Pa.
Bethlehem Steel Co., Bethlehem, Pa.
Electric Steel Foundry Co., Portland, Ore.
Greenville Tubes, Inc., Greenville, Pa.
H & H Tube & Mfg. Co., Detroit, Mich.
National Tube Div., United States Steel Corp., Pittsburgh, Pa.
Pacific Tube Co., Los Angeles, Calif.
Pittsburgh Steel Co., Pittsburgh, Pa.
Republic Steel Corp., Cleveland, O.
Ryerson & Son, Inc., Joseph T., Chicago, Ill.
Sawhill Tubular Products, Inc., Sharon, Pa.
Spang-Chalfant, Div. of National Supply Co., Pittsburgh, Pa.
Superior Tube Co., Norristown, Pa.
Timken Roller Bearing Co., Canton, O.
Wickwire Spencer Steel Div., The Colorado Fuel & Iron Corp., New York, N. Y.
Youngstown Sheet & Tube Co., Youngstown, O.

TUBING, STEEL, ALLOY, WELDED

Carpenter Steel Co., Alloy Tube Div., Union, N. J.
Crucible Steel Co. of America, Pittsburgh, Pa.
Damascus Tube Co., Greenville, Pa.
Greenville Tubes, Inc., Greenville, Pa.
H & H Tube & Mfg. Co., Detroit, Mich.
National Tube Div., United States Steel Corp., Pittsburgh, Pa.
Republic Steel Corp., Cleveland, O.
Ryerson & Son, Inc., Joseph T., Chicago, Ill.
Sawhill Tubular Products, Inc., Sharon, Pa.
Swepco Tube Corp., Clifton, N. J.
Trent Tube Co., East Troy, Wis.
Youngstown Sheet & Tube Co., Youngstown, O.
Youngstown Welding & Engineering Co., Youngstown, O.

TUBING, STEEL, BRAZED

Bundy Tubing Co., Detroit, Mich.
Sawhill Tubular Products, Inc., Sharon, Pa.

TUBING, STEEL, SEAMLESS

Babcock & Wilcox Co., Tubular Products Div., Beaver Falls, Pa.
Bethlehem Steel Co., Bethlehem, Pa.
Central Steel & Wire Co., Chicago, Ill.
Electric Steel Foundry Co., Portland, Ore.
Federal-Mogul Div., Federal-Mogul-Bower Bearings, Inc., Detroit, Mich.
General Plate Div., Metals & Controls Corp., Attleboro, Mass.
Jones & Laughlin Steel Corp., Pittsburgh, Pa.
Lenz Co., Dayton, O.
National Tube Div., United States Steel Corp., Pittsburgh, Pa.
Pacific Tube Co., Los Angeles, Calif.
Phoenix Iron & Steel Co., Phoenixville, Pa.
Pittsburgh Steel Co., Phoenix Steel Tube Div., Pittsburgh, Pa.
Republic Steel Corp., Cleveland, O.
Ryerson & Son, Inc., Joseph T., Chicago, Ill.
Sawhill Tubular Products, Inc., Sharon, Pa.
Spang-Chalfant, Div. of National Supply Co., Pittsburgh, Pa.
Superior Tube Co., Norristown, Pa.
Timken Roller Bearing Co., Canton, O.
Youngstown Sheet & Tube Co., Youngstown, O.

TUBING, STEEL, STAINLESS

Allegheny Ludlum Steel Corp., Pittsburgh, Pa.
American Cast Iron Pipe Co., Birmingham, Ala.
Autoclave Engineers Sales Corp., Erie, Pa.
Babcock & Wilcox Co., Tubular Products Div., Beaver Falls, Pa.
Carpenter Steel Co., Alloy Tube Div., Union, N. J.
Central Steel & Wire Co., Chicago, Ill.
Chase Brass & Copper Co., Waterbury, Conn.
Crucible Steel Co. of America, Pittsburgh, Pa.
Damascus Tube Co., Greenville, Pa.
Electric Steel Foundry Co., Portland, Ore.
Flexonics Corp., Maywood, Ill.
Greenville Tubes, Inc., Greenville, Pa.
International Metal Hose Co., Bellevue, O.
National Tube Div., United States Steel Corp., Pittsburgh, Pa.
Pacific Tube Co., Los Angeles, Calif.
Republic Steel Corp., Cleveland, O.
Roll-Weld Pipe & Tube, Inc., Jacksonville, Fla.
Ryerson & Son, Inc., Joseph T., Chicago, Ill.
Sawhill Tubular Products, Inc., Sharon, Pa.
Standard Tube Co., Detroit, Mich.
Superior Tube Co., Norristown, Pa.
Swepco Tube Corp., Clifton, N. J.
Timken Roller Bearing Co., Canton, O.
Trent Tube Co., East Troy, Wis.
Wall Tube & Metal Products Co., Newport, Tenn.
Youngstown Welding & Engrg. Co., Youngstown, O.

TUBING, STEEL, WELDED

American Pipe & Steel Corp., Alhambra, Calif.
Armco Steel Corp., Middletown, O.
Avon Tube Div., Highbie Mfg. Co., Rochester, Mich.
Babcock & Wilcox Co., Tubular Products Div., Beaver Falls, Pa.
Bundy Tubing Co., Detroit, Mich. (solder coated)
Central Steel & Wire Co., Chicago, Ill.
Channel Master Corp., Ellenville, N. Y.
Chicago Metal Mfg. Co., Chicago, Ill.
Clayton Mark & Co., Evanston, Ill.
Crucible Steel Co. of America, Pittsburgh, Pa.
Damascus Tube Co., Greenville, Pa.
H-P Products, Inc., Louisville, O.
Jones & Laughlin Steel Corp., Pittsburgh, Pa. (continuous electric weld)
Laclede Steel Co., St. Louis, Mo.
National Tube Div., United States Steel Corp., Pittsburgh, Pa.
Nikoh Tube Co., Chicago, Ill.
Pacific Tube Co., Los Angeles, Calif.
Pittsburgh Tube Co., Pittsburgh, Pa.
Radiant Heat and Cooling Co., Santa Clara, Calif.
Republic Steel Corp., Cleveland, O.
Revere Copper and Brass, Inc., New York, N. Y.
Roll-Weld Pipe & Tube, Inc., Jacksonville, Fla.
Ryerson & Son, Inc., Joseph T., Chicago, Ill.
Sawhill Tubular Products, Inc., Sharon, Pa.
South Chester Tube Co., Philadelphia, Pa.
Southern Pipe & Casing Co., Div. of U. S. Industries, Inc., Azusa, Calif.
Spang-Chalfant, Div. of National Supply Co., Pittsburgh, Pa.
Standard Tube Co., Detroit, Mich.
Swepco Tube Corp., Clifton, N. J.
Trent Tube Co., East Troy, Wis.
Wheatland Tube Co., Philadelphia, Pa.
Youngstown Sheet & Tube Co., Youngstown, O.
Youngstown Welding & Engineering Co., Youngstown, O.

TUBING, TITANIUM

Babcock & Wilcox Co., Tubular Products Div., Beaver Falls, Pa.
Bridgeport Brass Co., Bridgeport, Conn.
Carpenter Steel Co., Alloy Tube Div., Union, N. J.
Crucible Steel Co. of America, Pittsburgh, Pa.
Damascus Tube Co., Greenville, Pa.
Harvey Aluminum, Torrance, Calif.
Republic Steel Corp., Cleveland, O.
Sawhill Tubular Products, Inc., Sharon, Pa.
Superior Tube Co., Norristown, Pa.
Swepco Tube Corp., Clifton, N. J.
Trent Tube Co., East Troy, Wis.
Youngstown Welding & Engineering Co., Youngstown, O.

TUBING, WROUGHT IRON

Byers Co., A. M., Pittsburgh, Pa. (cold drawn)

TUBING, ZIRCONIUM

Babcock & Wilcox Co., The, Tubular Products Div., Beaver Falls, Pa.
Bridgeport Brass Co., Bridgeport, Conn.
Carpenter Steel Co., Alloy Tube Div., Union, N. J.
Crucible Steel Co. of America, Pittsburgh, Pa.
Damascus Tube Co., Greenville, Pa.
General Plate Div., Metals & Controls Corp., Attleboro, Mass.
Harvey Aluminum, Torrance, Calif.
Sawhill Tubular Products, Inc., Sharon, Pa.
Superior Tube Co., Norristown, Pa.
Trent Tube Co., East Troy, Wis.
Wolverine Tube, Div. of Calumet and Hecla, Inc., Allen Park, Mich.
Youngstown Welding & Engineering Co., Youngstown, O.

TURBINES, MECHANICAL DRIVE

Carling Turbine Blower Co., Worcester, Mass.
Coppus Engineering Corp., Worcester, Mass.
Dean Hill Pump Co., Indianapolis, Ind.
Elliott Co., Jeannette, Pa.
General Electric Co,. Apparatus Sales Div., Schenectady, N. Y.
General Electric Co., Small Steam Turbine Dept., Fitchburg, Mass.
Murray Iron Wks. Co., Burlington, Ia.
Pyle-National Co., The, Chicago, Ill.
Solar Aircraft Co., San Diego, Calif.
Steam Turbine Div., Worthington Corp., Wellsville, N. J.
Terry Steam Turbine Co., Hartford, Conn.
Westinghouse Electric Corp., Pittsburgh, Pa.
Whiton Machine Co., New London, Conn.
Wing Mfg. Co., L. J., Div. of Aero Supply Mfg. Co., Inc., Linden, N. J.
Worthington Corp., East Orange, N. J.

2, 3 AND 4-WAY VALVES

See Valves, 2, 3 and 4-way

ULTRASONIC DUST AND FUME COLLECTION

See Collection, Dust and Fume, Ultrasonic

ULTRASONIC TESTING

See Equipment, Ultrasonic Testing

ULTRAVIOLET LAMPS

See Lamps, Sterilizing for Duct Installation; Units, Sterilizing, Air

UNDERGROUND PIPING

See Conduit, Underground Piping

UNDERWATER HEATERS

See Heaters, Steam Jet, for Liquids

UNIONS, BRASS

Acheson Mfg. Co., Rankin, Pa.
Afco Fitting Co., Div. of Curtis Mfg. Co., Cleveland, O.
Airaterra (Roylyn Products), Glendale, Calif.
American Sanitary Mfg. Co., Abingdon, Ill.
Chase Brass & Copper Co., Waterbury, Conn.
Commonwealth Brass Corp., Detroit, Mich.
Crane Co., Chicago, Ill.
Flagg & Co., Inc., Stanley G., Philadelphia.
Gilbert Brass Foundry Co., St. Louis, Mo.
Grabler Mfg. Co., Cleveland, O.
Imperial Brass Mfg. Co., Chicago, Ill.
Ken-Ray Brass Products, Inc., Vermont, Ill.
King Union Co., Inc., Hillsgrove, R. I.
Leavitt Machine Co., Orange, Mass.
Moran Flexible Joint Co., Div. of Railroad Products Co., Cincinnati, O.
Mueller Brass Co., Port Huron, Mich.
New York Brass Foundry, New York, N. Y.
Nibco, Inc., Elkhart, Ind.
Patrol Valve Co., The, Cleveland, O. (dielectric insulating)
Phoenix Brass Fittings Corp., Irvington, N. J.
Pittsburgh Brass Mfg. Co., Pittsburgh, Pa.
Rhode Island Fittings Co., Providence, R. I.
Span Brass Mfg. Co., Otsego, Mich.
Superior Valve & Fittings Co., Pittsburgh, Pa.
Union Metal Works Co., Inc., Chelsea, Mass.
Walworth Co., New York, N. Y.
Weatherhead Co., The, Ft. Wayne Div., Ft. Wayne, Ind.

UNIONS, INSULATING

See Joints, Pipe, Electrical Insulating

UNIONS, MALLEABLE, BRASS SEAT

Airaterra (Roylyn Products), Glendale, Calif.
Almar Hydraulic Valve Co., Cleveland, O.
Beaton & Corbin Mfg. Co., Southington, Conn.
Corley Co., Inc., The, Plainville, Conn.
Crane Co., Chicago, Ill.
Das Div. of The Zeller Corp., Defiance, O.
Fairbanks Co., The, New York, N. Y.
Flagg & Co., Inc., Stanley G., Philadelphia, Pa.
General Fittings Co., East Greenwich, R. I.
Grabler Mfg. Co., Cleveland, O.
Grinnell Co., Inc., Providence, R. I.
Illinois Malleable Iron Co., Chicago, Ill.
Jefferson Union Co., Lexington, Mass.
King Union Co., Inc., Hillsgrove, R. I.
Malleable Iron Fittings Co., Branford, Conn.
Pacific Fittings Div., General Metals Corp., Hollydale, Calif.
Rhode Island Fittings Co., Providence, R. I.
Rockwood Sprinkler Co., Worcester, Mass.
Stockham Valves & Fittings, Birmingham, Ala.
Union Malleable Mfg. Co., Ashland, O.
Walworth Co., New York, N. Y.
Ward Foundries, Inc., J. P., Blossburgh, Pa.

UNIONS, ORIFICE

Catawissa Valve & Fittings Co., Catawissa, Pa.
Clayton Mark & Co., Evanston, Ill.
Dahl, G. W., Bristol, R. I.
Foxboro Co., Foxboro, Mass.
Greenwood Valve Div. of Vernon Tool Co., Ltd., Alhambra, Calif.
Ladish Co., Cudahy, Wis.
Midwest Piping Co., Inc., St. Louis, Mo.
Porter Co., Inc., H. K., Forge & Fittings Div., W-S Fittings Wks., Roselle, N. J.
Taylor Forge & Pipe Wks., Chicago, Ill.
Walworth Co., New York, N. Y.

UNIONS, PLASTIC

Argo Plastic Products, Cleveland, O.
Colonial Plastics Mfg. Co., Industrial Div., Cleveland, O. (unplasticized PVC)
Dow Chemical Co., The, Midland, Mich. (saran-lined)
Epco Sales, Inc., Cleveland, O.
Imperial Brass Mfg. Co., Chicago, Ill.
Luzerne Rubber Co., Trenton, N. J.
Skyline Industries Sales, Inc., Titusville, Pa.
Sloane Mfg. Co., Sun Valley, Calif.
Triangle Conduit & Cable Co., Inc., New Brunswick, N. J.
Tube Turns Plastics, Inc., Louisville, Ky.
Vanton Pump & Equipment Corp., Hillside, N. J.

UNIONS, STEEL

Afco Fitting Co., Div. of Curtis Mfg. Co., Cleveland, O.
Anchor Coupling Co., Inc., Libertyville, Ill.
Capitol Mfg. & Supply Co., Columbus, O.
Catawissa Valve & Fittings Co., Catawissa, Pa.
Chiksan Co., Brea, Calif.
Clayton Mark & Co., Evanston, Ill.
Crane Co., Chicago, Ill.
Das Div. of The Zeller Corp., Defiance, O.
Electric Steel Foundry Co., Portland, Ore.
Frick Co., Waynesboro, Pa.
Gilbert Brass Foundry Co., St. Louis, Mo.
Gray Tool Co., Houston, Tex.
Henry Valve Co., Melrose Park, Ill.
Imperial Brass Mfg. Co., Chicago, Ill.
Ladish Co., Cudahy, Wis.
Patrol Valve Co., The, Cleveland, O. (dielectric insulating)
Porter Co., Inc., H. K., Forge & Fittings Div., W-S Fittings Wks., Roselle, N. J.
Rockwood Sprinkler Co., Worcester, Mass.
Steel Improvement & Forge Co., The, Cleveland, O.
Vogt Machine Co., Henry, Louisville, Ky.
Walworth Co., New York, N. Y.

UNIT COOLERS

See Coolers, Unit

UNIT HEATERS

See Heaters, Unit

UNIT VENTILATORS

See Ventilators, Unit

UNITS, AIR CONDITIONING, FOR AUTOMOBILES

A.R.A. Mfg. Co., Ft. Worth, Texas
Chrysler Airtemp, Div. of Chrysler Corp., Dayton, O.
Frigidaire Div., General Motors Corp., Dayton, O.
Frigikar Corp., Dallas, Tex.
Great Northern Mfg. Corp., Chicago, Ill.
Harrison Radiator Div., General Motors, Lockport, N. Y.
Keco Industries, Inc., Cincinnati, O.
Kool Engineering Corp., Chicago, Ill.
Kool-Kar Co., Inc., Detroit, Mich.
Mitchell Co., John E., Dallas, Tex.
Thermador Electrical Mfg., Los Angeles, Calif.

UNITS, AIR CONDITIONING, BUS, TRUCK AND TRAILER

A.R.A. Mfg. Co., Ft. Worth, Texas.
Airtemp Construction, Div. of Chrysler Corp., Dayton, O.
Carrier Corp., Syracuse, N. Y.
Chrysler Airtemp, Div. of Chrysler Corp., Dayton, O.
Consumer Products, Motor Wheel Corp., Lansing, Mich.
Ellis & Watts Products Inc., Cincinnati, O.
Frigikar Corp., Dallas, Tex.
Keco Industries, Inc., Cincinnati, O.
McGraw-Edison Co., Clark Div. & Tropic-Aire Div., Chicago, Ill.
Metal Products Eng., Inc., Los Angeles, Calif. (Truck only)
Onan & Sons Inc., D. W., Minneapolis, Minn.
Thermo King Corp., Minneapolis, Minn.
Trane Co., The, La Crosse, Wis.
Waukesha Motor Co., Waukesha, Wis.

UNITS, AIR CONDITIONING, CENTRAL STATION TYPE

Self contained blower, heating and/or cooling coil, filter, humidifier unit for remote location and duct air distribution

Acme Industries, Inc., Jackson, Mich.
Addison Products Co., Addison, Mich.
Air & Refrigeration Corp., New York, N. Y.
Airtemp Construction, Div. of Chrysler Corp., Dayton, O.
Airtron Corp., Holland, O.
Alco Refrigeration Sales & Service, Inc., Cleveland, O.
Alton Mfg. Co., Dallas, Tex.
American Blower Div. of American-Standard, Detroit, Mich.
American Coils Co., Farmingdale, N. J.
American Cooling Tower Co., Kansas City, Mo.
Anchor Div., Stratton & Terstegge Co., Inc., New Albany, Ind.
Anetsberger Bros., Inc., Div. of Union Electric Corp., Northbrook, Ill.
Arkla Air Conditioning Corp., Little Rock, Ark. (absorption type)
Bahnson Co., Winston-Salem, N. C.
Bal-Air, Inc., Nashville, Tenn.
Barkow Mfg. Co., Inc., Aug. G., Milwaukee, Wis.
Blazer & Son, M., Passaic, N. J.
Bohn Aluminum & Brass Corp., Betz Div., Danville, Ill.
Bryant Mfg. Co., Indianapolis, Ind.
Buensod-Stacey, Inc., New York, N. Y.
Buffalo Forge Co., Buffalo, N. Y.
Carrier Corp., Syracuse, N. Y.
Century Engineering Corp., Cedar Rapids, Ia.
Chrysler Airtemp, Div. of Chrysler Corp., Dayton, O.
Clarage Fan Co., Kalamazoo, Mich.
Coleman Co., Inc., The, Wichita, Kans.
Cool-Ette, Inc., Detroit, Mich.
Curtis Mfg. Co., Refrigeration Div., St. Louis, Mo.
Domestic Mfg. Corp., Houston, Tex.
Drayer-Hanson, Div. of National-U. S. Radiator Corp., Los Angeles, Calif.
Drying Systems Co., Chicago, Ill.
Dunham-Bush, Inc., West Hartford, Conn.
Ellis & Watts Products, Inc., Cincinnati, O.
Friedrich Refrigerators, Inc., San Antonio, Tex.
Frigidaire Div., General Motors Corp., Dayton, O.
General Air Conditioning Corp., Los Angeles, Calif.

General Electric Co., Air Conditioning Dept., Tyler, Tex.
Gilbert & Barker Mfg. Co., West Spring, Mass.
Governair Corp., Oklahoma City, Okla.
Hastings Air Control, Inc., Omaha, Nebr.
Herman Nelson Products, American Air Filter Co., Inc., Louisville, Ky.
Howe Ice Machine Co., Chicago, Ill.
Iron Fireman Mfg. Co., Cleveland, O.
Keco Industries, Inc., Cincinnati, O.
Kennard Products, American Air Filter Co., Inc., Louisville, Ky.
Kramer Trenton Co., Trenton, N. J.
Larkin Coils, Inc., Atlanta, Ga.
Marlo Coil Co., St. Louis, Mo.
Master Fan Corp., Los Angeles, Calif.
McQuay, Inc., Minneapolis, Minn.
Melchior, Armstrong, Dessau Co. of Delaware, Inc., Ridgefield, N. J.
Midwest Air Conditioning Co., Des Moines, Ia.
National-U. S. Radiator Corp., Johnstown, Pa.
Nesbitt, Inc., John J., Philadelphia, Pa.
Niagara Blower Co., New York, N. Y.
Parks-Cramer Co., Fitchburg, Mass.
Payne Company, La Puente, Calif.
Recold Corp., Los Angeles, Calif.
Refrigeration Appliances, Inc., Chicago, Ill.
Rigidbilt Inc., Chicago, Ill.
Rinehart Inc., Richmond, Ind.
St. Louis Blow Pipe & Heater Co., Div. of Young Sales Corp., St. Louis, Mo.
Surface Combustion Corp., Toledo, O.
Temtrol, Inc., Okarche, Okla.
Thermal Engineering Corp., Houston, Tex.
Trane Co., The, La Crosse, Wis.
Typhoon Air Conditioning Co., Div. of Hupp Corp., Brooklyn, N. Y.
United States Air Conditioning Corp., Delaware, O. (10 to 60 tons)
Vilter Mfg. Co., Milwaukee, Wis.
Westinghouse Electric Corp., Air Conditioning Div., Staunton, Va.
Worthington Corp., East Orange, N. J.
York Corp., Subsidiary of Borg-Warner Corp., York, Pa.
Young Radiator Co., Racine, Wis.

UNITS, AIR CONDITIONING, EXCLUSIVELY FOR HOSPITAL OPERATING ROOMS, WITH EXPLOSIONPROOF MOTOR

Conditioned Air, Inc., Charleston, W. Va.
Marlo Coil Co., St. Louis, Mo.
Niagara Blower Co., New York, N. Y.
Trane Co., The, La Crosse, Wis.
Worthington Corp., East Orange, N. J.

UNITS, AIR CONDITIONING, HORIZONTAL PACKAGE TYPE

Self contained blower, cooling and/or heating coil, filter, humidifier unit for ceiling or platform location in space conditioned, for connection to remote compressor or cold water supply, and steam or hot water

Acme Industries, Inc., Jackson, Mich.
Air Conditioning Engineering Co., Cambridge, Mass.
Air & Refrigeration Corp., New York, N. Y.
Airtemp Construction, Div. of Chrysler Corp., Dayton, O.
Airtron Corp., Holland, O.
American Blower Div. of American-Standard, Detroit, Mich.
American Coils Co., Farmingdale, N. J.
Anchor Div., Stratton & Terstegge Co., Inc., New Albany, Ind.
Bal-Air, Inc., Nashville, Tenn.
Barkow Mfg. Co., Inc., Aug. G., Milwaukee, Wis.
Besser Furnace and Air Conditioning Corp., Charlotte, N. C.
Blazer & Son, M., Passaic, N. J.
Bohn Aluminum & Brass Corp., Betz Div., Danville, Ill.
Brown Products Corp., Union, N. J.
Bryant Mfg. Corp., Indianapolis, Ind.
Buensod-Stacey, Inc., New York, N. Y.
Buffalo Forge Co., Buffalo, N. Y.
Carrier Corp., Syracuse, N. Y.
Century Engineering Corp., Cedar Rapids, Ia.
Chrysler Airtemp, Div. of Chrysler Corp., Dayton, O.
Circle-Air Industries, Inc., Brooklyn, N. Y.
Clarage Fan Co., Kalamazoo, Mich.
Coolerator Div., McGraw-Edison Co., Albion, Mich.
Curtis Mfg. Co., Refrigeration Div., St. Louis, Mo.
Delco Appliance Div., General Motors Corp., Rochester, N. Y.
Drayer-Hanson, Div. of National-U. S. Radiator Corp., Los Angeles, Calif.
Drying Systems Co., Chicago, Ill.
Dunham-Bush, Inc., West Hartford, Conn.
Fedders-Quigan Corp., Buffalo, N. Y.
Friedrich Refrigerators, Inc., San Antonio, Tex.
Frigidaire Div., General Motors Corp., Dayton, O.
General Electric Co., Air Conditioning Dept., Tyler, Tex. (ceiling mounted)
Governair Corp., Oklahoma City, Okla.
Hastings Air Control, Inc., Omaha, Nebr.
Herman Nelson Products, American Air Filter Co., Inc., Louisville, Ky.
International Mfg. Co., Oklahoma City, Okla.
Iron Fireman Mfg. Co., Cleveland, O.
Kennard Products, American Air Filter Co., Inc., Louisville, Ky.
King Co. of Owatonna, The, Owatonna, Minn.
Kramer Trenton Co., Trenton, N. J.
Larkin Coils, Inc., Atlanta, Ga.
Lennox Industries Inc., The, Marshalltown, Ia.
Marlo Coil Co., St. Louis, Mo.
Master Fan Corp., Los Angeles, Calif.
McQuay, Inc., Minneapolis, Minn.
Midwest Air Conditioning Co., Des Moines, Ia.
Modine Mfg. Co., Racine, Wis.
Mueller Climatrol, Div. of Worthington Corp., Milwaukee, Wis.
National-U. S. Radiator Corp., Johnstown, Pa.
Nesbitt, Inc., John J., Philadelphia, Pa.
Niagara Blower Co., New York, N. Y.
Payne Company, La Puente, Calif.
Recold Corp., Los Angeles, Calif.
Refrigeration Appliances, Inc., Chicago, Ill.
Rempe Co., Chicago, Ill.
Rigidbilt Inc., Chicago, Ill.
St. Louis Blow Pipe & Heater Co., Div. of Young Sales Corp., St. Louis, Mo.
Stewart-Warner Corp., Heating & Air Conditioning Div., Lebanon, Ind.
Temtrol, Inc., Okarche, Okla.
Thermal Engineering Corp., Houston, Tex.
Trane Co., The, La Crosse, Wis.
Typhoon Air Conditioning Co., Div. of Hupp Corp., Brooklyn, N. Y.
United States Air Conditioning Corp., Delaware, O.
Vilter Mfg. Co., Milwaukee, Wis.
Western Blower Co., Seattle, Wash.
Westinghouse Electric Corp., Air Conditioning Div., Staunton, Va.
Williamson Co., Cincinnati, O.
Worthington Corp., East Orange, N. J.
York Corp., Subsidiary of Borg-Warner Corp., York, Pa.
Young Radiator Co., Racine, Wis.

UNITS, AIR CONDITIONING, INDUSTRIAL TYPE

Acme Industries, Inc., Jackson, Mich.
Air & Refrigeration Corp., New York, N. Y.
Airtron Corp., Holland, O.
American Blower Div. of American-Standard, Detroit, Mich.
American Cooling Tower Co., Kansas City, Mo.
Anetsberger Bros., Inc., Northbrook, Ill.
Bahnson Co., Winston-Salem, N. C.
Bal-Air, Inc., Nashville, Tenn.
Buffalo Forge Co., Buffalo, N. Y.
Carrier Corp., Syracuse, N. Y.
Chrysler Airtemp, Div. of Chrysler Corp., Dayton, O.
Clarage Fan Co., Kalamazoo, Mich.
Curtis Mfg. Co., Refrigeration Div., St. Louis, Mo.
Dialatemp, Inc., St. Louis, Mo.
Drayer-Hanson, Div. of National-U. S. Radiator Corp., Los Angeles, Calif.
Drying Systems Co., Chicago, Ill.
Dunham-Bush, Inc., West Hartford, Conn.
F5 Air Conditioning Corp., Tulsa, Okla.
Frick Co., Waynesboro, Pa.
Frigidaire Div., General Motors Corp., Dayton, O.
General Electric Co., Air Conditioning Dept., Tyler, Tex.
Governair Corp., Oklahoma City, Okla.
Haertel Co., Walter, Minneapolis, Minn.
Hastings Air Control, Inc., Omaha, Neb.
Herman Nelson Products, American Air Filter Co., Inc., Louisville, Ky.
Howe Ice Machine Co., Chicago, Ill.
Kennard Products, American Air Filter Co., Inc., Louisville, Ky.
King Co. of Owatonna, The, Owatonna, Minn.
Kramer Trenton Co., Trenton, N. J.
Larkin Coils, Inc., Atlanta, Ga.
Lintern Corp., Painesville, O.
Marlo Coil Co., St. Louis, Mo.
McQuay, Inc., Minneapolis, Minn.
Midwest Air Conditioning Co., Des Moines, Ia.
National-U.S. Radiator Corp., Johnstown, Pa.
Nesbitt, Inc., John J., Philadelphia, Pa.
Niagara Blower Co., New York, N. Y.
Recold Corp., Los Angeles, Calif.
Refrigeration Appliances, Inc., Chicago, Ill.
Rempe Co., Chicago, Ill.
Rigidbilt Inc., Chicago, Ill.
Rinehart Inc., Richmond, Ind.
Ross Engineering Div., J. O., Midland-Ross Corp., New York, N. Y.
St. Louis Blow Pipe & Heater Co., Div. of Young Sales Corp., St. Louis, Mo.
Simplaire, New York, N. Y.
Surface Combustion Corp., Toledo, O.
Temtrol, Inc., Okarche, Okla.
Thermal Engineering Corp., Houston, Tex.
Trane Co., The, La Crosse, Wis.
Typhoon Air Conditioning Co., Div. of Hupp Corp., Brooklyn, N. Y.
United States Air Conditioning Corp., Delaware, O.
Vilter Mfg. Co., Milwaukee, Wis.
Westinghouse Electric Corp., Air Conditioning Div., Staunton, Va.
Worthington Corp., East Orange, N. J.
X L Refrigerating Co., Chicago, Ill.
York Corp., Subsidiary of Borg-Warner Corp., York, Pa.
Young Radiator Co., Racine, Wis.

UNITS, AIR CONDITIONING, MOBILE, MOUNTED ON TRUCK OR TRAILER

Chrysler Airtemp, Div. of Chrysler Corp., Dayton, O. (3 to 36 tons)
Ellis & Watts Products, Inc., Cincinnati, O.
Keco Industries, Inc., Cincinnati, O.
Remington Air Conditioning Div., Remington Corp., Auburn, N. Y.

UNITS, AIR CONDITIONING, REVERSE REFRIGERATION CYCLE

American Coils Co., Farmingdale, N. J.
Carrier Corp., Syracuse, N. Y.
Century Engineering Corp., Cedar Rapids, Ia.
Drying Systems Co., Chicago, Ill.
Dunham-Bush, Inc., West Hartford, Conn.
Fedders-Quigan Corp., Buffalo, N. Y.
Frigidaire Div., General Motors Corp., Dayton, O.
General Electric Co., Air Conditioning Dept., Tyler, Tex.
Gibson Refrigerator Co., Greenville, Mich.
Lennox Industries Inc., The, Marshalltown, Ia.
Marlo Coil Co., St. Louis, Mo.
McMillan Comfortaire, Inc., Jacksonville, Fla.
Mitchell Mfg. Co., Chicago, Ill.
Mueller Climatrol, Div. of Worthington Corp., Milwaukee, Wis.
Tuck-Aire Furnace Co., San Francisco, Calif.
Typhoon Air Conditioning Co., Div. of Hupp Corp., Brooklyn, N. Y.
Typhoon Heat Pump Co., Div. of Hupp Corp., Tampa, Fla.
Weather King of Florida, Inc., Orlando, Fla.
York Corp., Subsidiary of Borg-Warner Corp., York, Pa.

UNITS, AIR CONDITIONING, SUMMER, EVAPORATIVE COOLING TYPE

For cooling by evaporation, no dehumidification

Air-Cooling Engineering Co., Evanston, Ill.
Airfan Engineering Co., Los Angeles, Calif.
Air & Refrigeration Corp., New York, N. Y.
Alton Mfg. Co., Dallas, Tex.
American Blower Div. of American-Standard, Detroit, Mich.
American Cooling Tower Co., Kansas City, Mo.
American Moistening Co., Cleveland, N. C.
Bahnson Co., Winston-Salem, N. C.
Barwick Mfg. Corp., Wichita, Kan.
Buensod-Stacey, Inc., New York, N. Y.
Campbell Co., E. K., Kansas City, Mo.

Carrier Corp., Syracuse, N. Y.
Comfort Products Inc., Dallas, Tex.
Dearborn Stove Co., Dallas, Tex.
Drayer-Hanson, Div. of National-U. S. Radiator Corp., Los Angeles, Calif.
Dunham-Bush, Inc., West Hartford, Conn.
Essick Mfg. Co., Los Angeles, Calif.
Farr Co., Los Angeles, Calif.
Hayes Furnace Mfg. & Supply Co., Los Angeles, Calif.
Heating Assurance, Inc., Spokane, Wash.
International Metal Products Co., Phoenix.
Kleer Kleen Mfg. Co., Hayward, Calif.
Lennox Industries, Inc., Marshalltown, Ia.
Magic Aire Div., United Electric Co., Wichita Falls, Tex.
Marlo Coil Co., St. Louis, Mo.
Martin Fan & Blower Co., Chicago, Ill.
Morey, Dan, Los Angeles, Calif. (as pen fiber replacement mats)
Mountain States Equipment Co., Denver.
National Engineering & Mfg. Co., Sedalia, Mo.
National Gas Equipment Co., Inc., Denison, Tex.
Palmer Mfg. Co., Phoenix, Ariz.
R. I. Humidifier & Ventilating Co., Inc., Cambridge, Mass.
Thermador Electrical Mfg., Los Angeles, Calif.
Typhoon Air Conditioning Co., Div. of Hupp Corp., Brooklyn, N. Y.
Utility Appliance Corp., Los Angeles, Calif.
Wright Mfg. Co., Phoenix, Ariz.

UNITS, AIR CONDITIONING, SUMMER, ROOM TYPE, FLOOR CABINET, REMOTE COMPRESSOR OR COLD WATER, UNDER 36,000 BTU PER HR CAPACITY

Self contained blower, coil, filter unit for connection to remote compressor or cold water supply

Acme Industries, Inc., Jackson, Mich.
Air Conditioning Engineering Co., Cambridge, Mass.
Air-temp Construction, Div. of Chrysler Corp., Dayton, O.
Airtron Corp., Holland, O.
Bal-Air, Inc., Nashville, Tenn.
Barkow Mfg. Co., Inc., Aug. G., Milwaukee, Wis.
Blazer & Son, M., Passaic, N. J.
Brown Products Corp., Union, N. J.
Carlen Associates, New York, N. Y.
Carrier Corp., Syracuse, N. Y.
Century Engineering Corp., Cedar Rapids, Ia.
Chrysler Airtemp, Div. of Chrysler Corp., Dayton, O.
Circle-Air Industries, Inc., Brooklyn, N. Y.
Curtis Mfg. Co., Refrigeration Div., St. Louis, Mo.
Drayer-Hanson, Div. of National-U. S. Radiator Corp., Los Angeles, Calif.
Dunham-Bush, Inc., West Hartford, Conn.
Embassy Steel Products, Inc., Brooklyn, N. Y.
Fedders-Quigan Corp., Heating Div., Trenton, N. J.
Frigidaire Div., General Motors Corp., Dayton, O.
Hastings Air Control, Inc., Omaha, Neb.
Hydrotherm, Inc., Northvale, N. J.
Ilg Electric Ventilating Co., Chicago, Ill.
International Mfg. Co., Oklahoma City, Okla.
Kritzer Radiant Coils, Inc., Batavia, Ill.
Lennox Industries, Inc., Marshalltown, Ia.
Marlo Coil Co., St. Louis, Mo.
McQuay, Inc., Minneapolis, Minn.
Mitchell Mfg. Co., Chicago, Ill.
Modine Mfg. Co., Racine, Wis.
Mueller Climatrol, Div. of Worthington Corp., Milwaukee, Wis.
National-U. S. Radiator Corp., Johnstown, Pa.
Penn Boiler & Burner Mfg. Corp., Lancaster, Pa.
Refrigeration Appliances, Inc., Chicago, Ill.
Rinehart Inc., Richmond, Ind.
Round Oak Co., Inc., Dowagiac, Mich.
Stewart-Warner Corp., Heating & Air Conditioning Div., Lebanon, Ind.
Tenney Engineering, Inc., Union, N. J.
ThermoRay Corp., Newark, N. J.
Trane Co., The, La Crosse, Wis.
Typhoon Air Conditioning Co., Div. of Hupp Corp., Brooklyn, N. Y.
United States Air Conditioning Corp., Delaware, O.
Webster & Co., Warren, Camden, N. J.
Westinghouse Electric Corp., Air Conditioning Div., Staunton, Va.
Whitehall Engineering Co., Inc., Chicago, Ill.
Williamson Co., Cincinnati, O.
Worthington Corp., East Orange, N. J.
Wright Mfg. Co., Phoenix, Ariz.
York Corp., Subsidiary of Borg-Warner Corp., York, Pa.
Young Radiator Co., Racine, Wis.

UNITS, AIR CONDITIONING, SUMMER, ROOM TYPE, FLOOR CABINET, SELF CONTAINED COMPRESSOR, UNDER 36,000 BTU PER HR CAPACITY

Self contained blower, coil, compressor, filter unit

Air Conditioning Engineering Co., Cambridge, Mass.
Airtron Corp., Holland, O.
American Furnace Co., St. Louis, Mo.
Automatic Corp., St. Louis, Mo.
Bal-Air, Inc., Nashville, Tenn.
Barkow Mfg. Co., Inc., Aug. G., Milwaukee, Wis.
Carrier Corp., Syracuse, N. Y.
Century Engineering Corp., Cedar Rapids, Ia.
Chicago Steel Furnace Co., Chicago, Ill.
Chrysler Airtemp, Div. of Chrysler Corp., Dayton, O.
Cool-Ette, Inc., Detroit, Mich.
Emerson Electric Mfg. Co., The, St. Louis, Mo.
Emerson Radio & Phono Corp., Jersey City, N. J.
Fedders-Quigan Corp., Buffalo, N. Y.
General Air Conditioning Corp., Los Angeles.
Gibson Refrigerator Co., Greenville, Mich.
Great Northern Mfg. Corp., Chicago, Ill.
Hotpoint Co., Chicago, Ill.
Ingersoll Conditioned Air Div., Borg-Warner Corp., Kalamazoo, Mich.
Mitchell Mfg. Co., Chicago, Ill.
Mueller Climatrol, Div. of Worthington Corp., Milwaukee, Wis.
National-U. S. Radiator Corp., Johnstown, Pa.
Philco Corp., Philadelphia, Pa.
Primor Products, Div. Borg-Warner Corp., Adrian, Mich.
Radio Corp. of America, RCA Victor Div., Camden, N. J.
Remington Air Conditioning Div., Remington Corp., Auburn, N. Y.
Rinehart Inc., Richmond, Ind.
Round Oak Co., Inc., Dowagiac, Mich.
Surface Combustion Corp., Toledo, O.
Sutton Corp., O. A., The, Wichita, Kan.
Typhoon Air Conditioning Co., Div. of Hupp Corp., Brooklyn, N. Y.
Viking Mfg. Corp., Cleveland, O.
Webster & Co., Warren, Camden, N. J.
Westinghouse Electric Corp., Air Conditioning Div., Staunton, Va.
Wright Mfg. Co., Phoenix, Ariz.
York Corp., Subsidiary of Borg-Warner Corp., York, Pa.

UNITS, AIR CONDITIONING, SUMMER, STORE TYPE, FLOOR CABINET, SELF CONTAINED COMPRESSOR, 36,000 BTU PER HR CAPACITY AND OVER

Self contained blower, coil, compressor, filter unit with air discharge approximately 6 ft above floor

Acme Industries, Inc., Jackson, Mich.
Airtemp Construction, Div. of Chrysler Corp., Dayton, O.
Airtron Corp., Holland, O.
American Blower Div. of American-Standard, Detroit, Mich.
American Coils Co., Farmingdale, N. J.
American Furnace Co., St. Louis, Mo.
American Standard, Air Conditioning Div., New York, N. Y.
Anchor Div., Stratton & Terstegge Co., Inc., New Albany, Ind.
Armstrong Furnace Co., Div. of National Union Electric Corp., Columbus, O.
Automatic Corp., St. Louis, Mo.
Bal-Air, Inc., Nashville, Tenn.
Barkow Mfg. Co., Inc., Aug. G., Milwaukee, Wis.
Bryant Mfg. Corp., Indianapolis, Ind.
Carrier Corp., Syracuse, N. Y.
Century Engineering Corp., Cedar Rapids, Ia.
Chrysler Airtemp, Div. of Chrysler Corp., Dayton, O.
Conditioned Air, Inc., Charleston, W. Va.
Cool-Ette, Inc., Detroit, Mich.
Crane Co., Chicago, Ill.
Curtis Mfg. Co., Refrigeration Div., St. Louis, Mo.
Dialatemp, Inc., St. Louis, Mo.
Dunham-Bush, Inc., West Hartford, Conn.
Emerson Radio & Phono Corp., Jersey City, N. J.
Frick Co., Waynesboro, Pa.
Friedrich Refrigerators, Inc., San Antonio, Tex.
Frigidaire Div., General Motors Corp., Dayton, O.
General Automatic Products Corp., Baltimore, Md.
General Electric Co., Air Conditioning Dept., Tyler, Tex.
Gibson Refrigerator Co., Greenville, Mich.
Governair Corp., Oklahoma City, Okla.
Great Northern Mfg. Corp., Chicago, Ill.
Hastings Air Control, Inc., Omaha, Nebr.
Ingersoll Conditioned Air Div., Borg-Warner Corp., Kalamazoo, Mich.
Lennox Industries Inc., The, Marshalltown, Ia.
Melchior, Armstrong, Dessau Co. of Delaware, Inc., Ridgefield, N. J.
Midwest Air Conditioning Co., Des Moines, Ia.
Mitchell Mfg. Co., Chicago, Ill.
Muncie Gear Wks., Inc., Muncie, Ind.
National-U. S. Radiator Corp., Johnstown, Pa.
Perfection Industries Div., Hupp Corp., Cleveland, O.
Philco Corp., Philadelphia, Pa.
Primor Products, Div. Borg-Warner Corp., Adrian, Mich.
Rheem Mfg. Co., Chicago, Ill.
Round Oak Co., Inc., Dowagiac, Mich.
Surface Combustion Corp., Toledo, O.
Therm-Air Mfg. Co., Peekskill, N. Y.
Trane Co., The, LaCrosse, Wis.
Typhoon Air Conditioning Co., Div. of Hupp Corp., Brooklyn, N. Y.
United States Air Conditioning Corp., Delaware, O.
Viking Mfg. Corp., Cleveland, O.
Westinghouse Electric Corp., Air Conditioning Div., Staunton, Va.
Whitehall Engineering Co., Inc., Chicago, Ill.
Williams Oil-O-Matic Heating Co., Div. of National Union Electric Corp., Columbus, O.
Worthington Corp., East Orange, N. J.
Wright Mfg. Co., Phoenix, Ariz.
York Corp., Subsidiary of Borg-Warner Corp., York, Pa.

UNITS, AIR CONDITIONING, SUMMER, WALL TYPE, SELF-CONTAINED, FOR MOUNTING THROUGH WALL ONLY

Addison Products Co., Addison, Mich.
Airtemp Construction, Div. of Chrysler Corp., Dayton, O.
Amic Mfg. Corp., Long Island City, N. Y.
Century Engineering Corp., Cedar Rapids, Ia.
Chrysler Airtemp, Div. of Chrysler Corp., Dayton, O.
Coleman Co., Inc., The, Wichita, Kans.
Emerson Radio & Phono Corp., Jersey City, N. J.
Fedders-Quigan Corp., Buffalo, N. Y.
Fresh'nd-Aire Co., Div. of Cory Corp., Chicago, Ill.
Frigidaire Div., General Motors Corp., Dayton, O.
General Electric Co., Appliance & Television Receiver Div., Louisville, Ky.
I. W. Air Conditioning Corp., New York, N. Y.
Kelvinator Div., American Motors Corp., Detroit, Mich.
King Refrigerator Co., Glendale, N. Y.
Lewyt Air-Conditioner Corp., Brooklyn, N. Y.
Mueller Climatrol, Div. of Worthington Corp., Milwaukee, Wis.
Remington Air Conditioning Div., Remington Corp., Auburn, N. Y.
Sutton Corp., O. A., The, Wichita, Kans.
Typhoon Air Conditioning Co., Div. of Hupp Corp., Brooklyn, N. Y.

Webster & Co., Warren, Camden, N. J.
Worthington Corp., East Orange, N. J.
York Corp., Subsid. of Borg-Warner Corp., York, Pa.

UNITS, AIR CONDITIONING, WINDOW, FOR CASEMENT WINDOWS

Admiral Corp., Chicago, Ill.
Amana Refrigeration, Inc., Amana, Ia.
Carrier Corp., Syracuse, N. Y.
Chrysler Airtemp, Div. of Chrysler Corp., Dayton, O. (with provision for heating)
Emerson Radio & Phono Corp., Jersey City, N. J.
Fedders-Quigan Corp., Buffalo, N. Y.
Fresh'nd-Aire Co., Div. of Cory Corp., Chicago, Ill.
Frigidaire Div., General Motors Corp., Dayton, O.
General Electric Co., Appliance & Television Receiver Div., Louisville, Ky.
I. W. Air Conditioning Corp., New York, N. Y.
Kelvinator Div., American Motors Corp., Detroit, Mich.
Mitchell Mfg. Co., Chicago, Ill.
Philco Corp., Philadelphia, Pa. (Heating element available)
Sutton Corp., O. A., The, Wichita, Ks.
Universal Major Electric Appliances, Inc., Baltimore, Md.
Westinghouse Electric Corp., Electric Appliance Div., East Springfield, Mass.

UNITS, AIR CONDITIONING, WINDOW, FOR DOUBLE-HUNG WINDOWS

Addison Products Co., Addison, Mich.
Admiral Corp., Chicago, Ill.
Amana Refrigeration, Inc., Amana, Ia.
Automatic Corp., St. Louis, Mo.
Blissfield Mfg. Co., Blissfield, Mich.
Burnham Corp., Irvington, N. Y.
Carrier Corp., Syracuse, N. Y.
Cauhorn Distributing Co., Detroit, Mich.
Chrysler Airtemp, Div. of Chrysler Corp., Dayton, O. (with provision for heating)
Coolerator Div., McGraw-Edison Co., Albion, Mich.
Emerson Electric Mfg. Co., The, St. Louis, Mo.
Emerson Radio & Phono Corp., Jersey City, N. J.
Fedders-Quigan Corp., Buffalo, N. Y.
Fresh'nd-Aire Company, Div. of Cory Corp., Chicago, Ill.
Friedrich Refrigerators, Inc., San Antonio, Tex.
Frigidaire Div., General Motors Corp., Dayton, O.
General Electric Co., Appliance & Television Receiver Div., Louisville, Ky.
Gibson Refrigerator Co., Greenville, Mich.
Great Northern Mfg. Corp., Chicago, Ill.
Hotpoint Co., Chicago, Ill. (with heating element)
International Harvester Co., Chicago, Ill.
I. W. Air Conditioning Corp., New York, N. Y.
Kelvinator Div., American Motors Corp., Detroit, Mich.
King Refrigerator Co., Glendale, N. Y.
Lewyt Air-Conditioner Corp., Brooklyn, N. Y.
Mathes Co., The, Ft. Worth, Tex.
Mitchell Mfg. Co., Chicago, Ill.
National Engineering & Mfg. Co., Sedalia, Mo.
Philco Corp., Philadelphia, Pa. (heating element available)
Radio Corp. of America, RCA Victor Div., Camden, N. J.
Remington Air Conditioning Div., Remington Corp., Auburn, N. Y.
Sutton Corp., O. A., The, Wichita, Kan.
Universal Major Electric Appliances, Inc., Baltimore, Md.
Viking Mfg. Corp., Cleveland, O. (heating element optional)
Westinghouse Electric Corp., Electric Appliance Div., East Springfield, Mass. (with or without heating element)
Whirlpool Corp., St. Joseph, Mich.
York Corp., Subsidiary of Borg-Warner Corp., York, Pa.

UNITS, AIR CONDITIONING, WINTER, ROOM TYPE, FLOOR CABINET

Self contained blower, filter, heating coil, humidifier unit

Air Conditioning Engineering Co., Cambridge.
Air & Refrigeration Corp., New York, N. Y.
Auburn Burner Co., Auburn, Ind.
Bal-Air, Inc., Nashvile, Tenn.
Barkow Mfg. Co., Inc., Aug. G., Milwaukee, Wis.
Buffalo Forge Co., Buffalo, N. Y.
Campbell Heating Co., Des Moines, Ia.
Clarage Fan Co., Kalamazoo, Mich.
Dalzen Mfg. Co., St. Clair, Mich.
Drayer-Hanson, Div. of National-U. S. Radiator Corp., Los Angeles, Calif.
Johnson Co., S. T., Oakland, Calif.
Kehm Corp., The, Chicago, Ill.
Marlo Coil Co., St. Louis, Mo.
McQuay, Inc., Minneapolis, Minn.
Mitchell Mfg. Co., Chicago, Ill.
Modine Mfg. Co., Racine, Wis.
Mueller Climatrol, Div. of Worthington Corp., Milwaukee, Wis.
National-U. S. Radiator Corp., Johnstown, Pa.
Surface Combustion Corp., Toledo, O.
Trane Co., The, La Crosse, Wis.
Typhoon Air Conditioning Co., Div. of Hupp Corp., Brooklyn, N. Y.
United States Air Conditioning Corp., Delaware, O.
Viking Mfg. Corp., Cleveland, O.
Westinghouse Electric Corp., Air Conditioning Div., Staunton, Va.
York Corp., Subsidiary of Borg-Warner Corp., York, Pa.

UNITS, AIR CONDITIONING, YEAR AROUND, FAN-COIL TYPE, FOR INSTALLATION WITH OR WITHOUT CABINET IN ROOM, OR IN CLOSET SPACE, OVER CORRIDOR, ETC.

Comprises Blower, Chilled Water Direct Expansion or Hot Water Coil, for Connection to Remote Compressor or Chilled Water Supply

Acme Industries, Inc., Jackson, Mich.
Air Conditioning Engineering Co., Cambridge.
Airtemp Construction, Div. of Chrysler Corp., Dayton, O.
Airtherm Mfg. Co., St. Louis, Mo.
American Radiator & Standard Sanitary Corp., Plumbing & Heating Div., New York, N. Y.
Auburn Burner Co., Auburn, Ind.
Barkow Mfg. Co., Inc., Aug. G., Milwaukee, Wis.
Blazer & Son, M., Passaic, N. J.
Brown Products Corp., Union, N. J.
Buffalo Forge Co., Buffalo, N. Y.
Burnham Corp., Irvington, N. Y.
Carrier Corp., Syracuse, N. Y.
Circle-Air Industries, Inc., Brooklyn, N. Y.
Clarage Fan Co., Kalamazoo, Mich.
Curtis Mfg. Co., Refrigeration Div., St. Louis, Mo.
Deansteel Products Co., San Antonio, Texas.
Delco Appliance Div., General Motors Corp., Rochester, N. Y.
Dunham-Bush, Inc., West Hartford, Conn.
Fedders-Quigan Corp., Heating Div., Trenton, N. J.
Ilg Electric Ventilating Co., Chicago, Ill.
International Mfg. Co., Oklahoma City, Okla.
Kritzer Radiant Coils, Inc., Batavia, Ill.
Marlo Coil Co., St. Louis, Mo.
McQuay, Inc., Minneapolis, Minn.
Mitchell Mfg. Co., Chicago, Ill.
Modine Mfg. Co., Racine, Wis.
National-U. S. Radiator Corp., Johnstown, Pa.
Niagara Blower Co., New York, N. Y.
Payne Company, La Puente, Calif.
Peerless of America, Inc., Chicago, Ill.
Recold Corp., Los Angeles, Calif.
Refrigeration Appliances, Inc.. Chicago, Ill.
Roberts-Gordon Appliance Corp., Buffalo, N. Y.
Temtrol, Inc., Okarche, Okla.
Trane Co., The, La Crosse, Wis.
Tuck-Aire Furnace Co., San Francisco, Calif.
Typhoon Air Conditioning Co., Div. of Hupp Corp., Brooklyn, N. Y.
United States Air Conditioning Corp., Delaware, O.
Viking Mfg. Corp., Cleveland, O.
Webster & Co., Warren, Camden, N. J.
Weil-McLain Co., Michigan City, Ind.
Western Blower Co., Seattle, Wash.
Westinghouse Electric Corp., Air Conditioning Div., Staunton, Va.
Witt Co., A. H., Los Angeles, Calif.
Worthington Corp., East Orange, N. J.
Wright Mfg. Co., Phoenix, Ariz.
York Corp., Subsidiary of Borg-Warner Corp., York, Pa.
Young Radiator Co., Racine, Wis.

UNITS, AIR CONDITIONING, YEAR AROUND, ROOM TYPE, FLOOR CABINET

Self contained blower, cooling and heating coil, filter, humidifier unit for connection to remote compressor or cold water supply, and steam or hot water supply

Acme Industries, Inc., Jackson, Mich.
Air Conditioning Engineering Co., Cambridge, Mass.
Air & Refrigeration Corp., New York, N. Y.
Airtemp Construction, Div. of Chrysler Corp., Dayton, O.
Airtron Corp., Holland, O.
American Coils Co., Farmingdale, N. J.
Auburn Burner Co., Auburn, Ind.
Bal-Air, Inc., Nashville, Tenn.
Barkow Mfg. Co., Inc., Aug. G., Milwaukee, Wis.
Baseline Mfg. Corp. of Fla., St. Petersburg, Fla.
Blazer & Son, M., Passaic, N. J.
Brown Products Corp., Union, N. J.
Buffalo Forge Co., Buffalo, N. Y.
Carrier Corp., Syracuse, N. Y.
Chrysler Airtemp, Div. of Chrysler Corp., Dayton, O.
Circle Air Industries, Inc., Brooklyn, N. Y.
Clarage Fan Co., Kalamazoo, Mich.
Curtis Mfg. Co., Refrigeration Div., St. Louis, Mo.
Drayer-Hanson, Div. of National-U. S. Radiator Corp., Los Angeles, Calif.
Dunham-Bush, Inc., West Hartford, Conn.
Fedders-Quigan Corp., Heating Div., Trenton, N. J.
Frigidaire Div., General Motors Corp., Dayton, O.
Hastings Air Control, Inc., Omaha, Nebr.
Herman Nelson Products, American Air Filter Co., Inc., Louisville, Ky.
Ilg Electric Ventilating Co., Chicago, Ill.
Johnson Co., S. T., Oakland, Calif.
Kramer Trenton Co., Trenton, N. J.
Kritzer Radiant Coils, Inc., Batavia, Ill.
Marlo Coil Co., St. Louis, Mo.
McQuay, Inc., Minneapolis, Minn.
Modine Mfg. Co., Racine, Wis.
Mueller Climatrol, Div. of Worthington Corp., Milwaukee, Wis.
National-U. S. Radiator Corp., Johnstown, Pa.
Nesbitt, Inc., John J., Philadelphia, Pa.
Niagara Blower Co., New York, N. Y.
Penn Boiler & Burner Mfg. Corp., Lancaster, Pa.
Refrigeration Appliances, Inc., Chicago, Ill.
Remington Air Conditioning Div., Remington Corp., Auburn, N. Y.
Rittling Corp., The, Buffalo, N. Y.
Trane Co., The, La Crosse, Wis.
Typhoon Air Conditioning Co., Div. of Hupp Corp., Brooklyn, N. Y.
United States Air Conditioning Corp., Delaware, O.
Westcott Snyder Mfg. Corp., Madison, N. J.
Westinghouse Electric Corp., Air Conditioning Div., Staunton, Va.
Worthington Corp., East Orange, N. J.
York Corp., Subsidiary of Borg-Warner Corp., York, Pa.
Young Radiator Co., Racine, Wis.

UNITS, AIR CONDITIONING, YEAR AROUND, ROOM TYPE, FLOOR CABINET

Self Contained Compressor, Blower, Filter, Cooling Coils and Heating Coils for Connection to Steam or Hot Water Supply

American Coils Co., Farmingdale, N. J.
American Radiator & Standard Sanitary Corp., Plumbing & Heating Div., New York, N. Y.
Curtis Mfg. Co., Refrigeration Div., St. Louis, Mo.
Dialatemp, Inc., St. Louis, Mo.
General Electric Co., Appliance & Television Receiver Div., Louisville, Ky.

Modine Mfg. Co., Racine, Wis.
Mueller Climatrol, Div. of Worthington Corp., Milwaukee, Wis.
National-U. S. Radiator Corp., Johnstown, Pa.
Webster & Co., Warren, Camden, N. J.
York Corp., Subsidiary of Borg-Warner Corp., York, Pa.

UNITS, AIR CONDITIONING, YEAR AROUND, ROOM TYPE, FLOOR CABINET, INDUCTION

Self-Contained Cooling and Heating Coil, Filter, Etc. for Connection to High Pressure Primary Air Supply, Cold Water Supply, and Hot Water Supply

American Blower Div. of American-Standard, Detroit, Mich.
Barkow Mfg. Co., Inc., Aug. C., Milwaukee.
Carrier Corp., Syracuse, N. Y.
Nesbitt, Inc., John J., Philadelphia, Pa.
Trane Co., The, La Cross, Wis.
York Corp., Subsidiary of Borg-Warner Corp., York, Pa.
Worthington Corp., East Orange, N. J.

UNITS, CONDENSATE DISPOSAL, FOR AIR CONDITIONING

See Pumps, Condensate, For Removing Condensation from Air Conditioning Units

UNITS, EXHAUSTER, CENTRIFUGAL FAN

Airfan Engineering Co., Los Angeles, Calif.
Ammerman Co., Inc., Stillwater, Minn.
Barry Blower Co., Minneapolis, Minn.
Brookside Corp., McCordsville, Ind.
Brundage Co., The, Kalamazoo, Mich.
Buffalo Forge Co., Buffalo, N. Y.
Carnes Corp., Verona, Wis.
Clarage Fan Co., Kalamazoo, Mich.
Herman Nelson Products, American Air Filter Co., Inc., Louisville, Ky.
Jenn-Air Products Co., Indianapolis, Ind.
Master Fan Corp., Los Angeles, Calif.
Nesbitt Co., John J., Philadelphia, Pa.
Power Engineering Corp., Weirton, W. Va.
Power Line Fan Co., Inc., Subsidiary of Chelsea Products, Inc., Plainfield, N. J.
Quickdraft Corp., Canton, O.
Robinson Ventilating Co., Zelienople, Pa.
United States Air Conditioning Corp., Delaware, O.

UNITS, FUEL OIL, HEATING, PUMPING AND STRAINING

Ace Engineering Co., Chicago, Ill.
Alco Products, Inc., Schenectady, N. Y.
Barclay, Inc., Robert, Chicago, Ill.
Best Combustion Equipment Co., Inc., W. N., Carlstadt, N. J.
Canton Stoker Corp., Canton, O.
Cleaver-Brooks Co., Milwaukee, Wis.
Coen Co., San Francisco, Calif.
Condenser Service & Engineering Co., Inc., Hoboken, N. J.
Davis Engineering Corp., Elizabeth, N. J.
Drying Systems Co., Chicago, Ill.
Eagan Co., Inc., Walter H., Philadelphia, Pa.
Engineer Co., New York, N. Y.
Faber Engineer Co., Inc., Norristown, Pa.
Hauck Mfg. Co., Brooklyn, N. Y.
Hite Mfg. Co., N. E., Chicago, Ill.
Iron Fireman Mfg. Co., Cleveland, O.
Leahy Mfg. Co., Los Angeles, Calif.
Lientz Co., B. P., Kansas City, Mo.
National Airoil Burner Co., Inc., Philadelphia, Pa.
Northern Ordnance Inc., Subsidiary of Northern Pump Co., Minneapolis, Minn.
Peabody Engineering Corp., New York, N. Y.
Petro, Cleveland, O.
Preferred Utilities Mfg. Corp., New York, N. Y.
Ray Oil Burner Co., San Francisco, Calif.
Reliable Products Mfg. Co., Inc., Brooklyn, N. Y.
Schurs Oil Burner Co., Los Angeles, Calif.
Staples & Pfeiffer, San Francisco, Calif.
Todd Shipyards Corp., Products Div., Brooklyn, N. Y.
Tuthill Pump Co., Chicago, Ill.
Warner Lewis Co., Div. of Fram Corp., Tulsa, Okla.
Webster Electric Co., Racine, Wis.
Wiegand Co., Edwin L., Pittsburgh, Pa. (electric)
Wilson Engineering Corp., Chicago, Ill.

UNITS, HEAT RECOVERY, AIR-TO-AIR

Therm-O-Wheel, Inc., Long Island City, N. Y.

UNITS, HEATING AND VENTILATING, HORIZONTAL PACKAGE TYPE

Aerovent Fan Co., Inc., Piqua, O.
Arkos Mfg. Co., Detroit, Mich.
Buffalo Forge Co., Buffalo, N. Y.
Campbell Co., E. K., Kansas City, Mo.
Chicago Steel Furnace Co., Chicago, Ill.
Clarage Fan Co., Kalamazoo, Mich.
Herman Nelson Products, American Air Filter Co., Inc., Louisville, Ky.
Kennard Products, American Air Filter Co., Inc., Louisville, Ky.
Master Fan Corp., Los Angeles, Calif.
McQuay, Inc., Minneapolis, Minn.
Nesbitt Co., John J., Philadelphia, Pa.
Recold Corp., Los Angeles, Calif.
Temtrol, Inc., Okarche, Okla.
Valveblower Co. of Calif., Santa Fe Springs, Calif.

UNITS, MIXING, SOUND AND VOLUME CONTROL, FOR DOUBLE DUCT HIGH VELOCITY AIR CONDITIONING SYSTEM

Anemostat Corp. of America, New York, N. Y.
Barber-Colman Co., Rockford, Ill.
Buensod-Stacey, Inc., New York, N. Y.
Connor Engineering Corp., Danbury, Conn.
Herman Nelson Products, American Air Filter Co., Inc., Louisville, Ky.
Thermotank, Inc., Products Div., Detroit, Mich.
Tuttle & Bailey, Div. of Allied Thermal Corp., New Britain, Conn.

UNITS, STERILIZING, AIR

Air Purification Service, Inc., New York, N. Y.
Barnebey-Cheney Co., Columbus, O. (with activated charcoal)
Cooper Hewitt Electric Co., Div. of Sperti Faraday, Inc., Hoboken, N. J.
Fuller Co., D. William, Chicago, Ill.
Germatrol Corp., Pittsburgh, Pa.
Hanovia Lamp Div., Engelhard Industries, Inc., Newark, N. J.
Kewaunee Mfg. Co., Adrian, Mich.
Sampson Scientific Co., Div. of the Sampson Chemical & Pigment Corp., Chicago, Ill.
Sperti Faraday, Inc., Hoboken, N. J.

UNITS, STERILIZING, WATER

Hanovia Lamp Div., Engelhard Industries, Inc., Newark, N. J.

UNITS, WINDOW VENTILATOR AND FILTER

Airgard Mfg. Co., Chicago, Ill.
Air-Net Appliance Corp., Chicago, Ill. (with heating unit)
Ilg Electric Ventilating Co., Chicago, Ill.
Meir Electric & Machine Co., Inc., Indianapolis, Ind.
Reed Unit-Fans, Inc., New Orleans, La.
Standard Electric Mfg. Co., West Berlin, N. J.
Utility Appliance Corp., Los Angeles, Calif.

UNIVERSAL JOINTS

See Joints, Universal, for Operating Valves

VACUUM CLEANERS FOR BOILERS

See Cleaners, Vacuum, for Boilers

VACUUM CLEANING SYSTEMS, FITTINGS FOR

See Fittings for Central Vacuum Cleaning Systems

VACUUM GAGES

See Gages, Indicating, Vacuum

VACUUM HEATING SYSTEMS

See Systems, Heating, Vacuum

VACUUM PUMPS

See Pumps, Vacuum

VACUUM RECORDERS

See Recorders, Pressure and Vacuum

VALVE COVERS

See Covers, Protective, Valve and Flange

VALVE OPERATORS

See Operators, Valve

VALVE REPAIR KITS

See Kits, Repair for Pipes, Tanks, Valves, Flanges, and Ducts

VALVE RESEATERS

See Reseaters, Valve

VALVES, AIR OPERATING

A-P Controls Div., Controls Co. of America, Milwaukee, Wis.
Airmatic Valve, Inc., Cleveland, O.
American Moistening Co., Cleveland, N. C.
Associated Valve & Engineering Co., North Wales, Pa.
Atlas Valve Co., Newark, N. J.
Automatic Switch Co., Florham Park, N. J.
Bailey Co., Chas. M., San Francisco, Calif.
Barksdale Valves, Los Angeles, Calif.
Binks Mfg. Co., Chicago, Ill.
Black, Sivalls & Bryson, Inc., Kansas City, Mo.
Bristol Co., The, Waterbury, Conn.
Clark Controller Co., Cleveland, O.
Conoflow Corp., Subsidiary of Walworth Co., Philadelphia, Pa.
Crane Co., Chicago, Ill.
Crosby Valve & Gage Co., Wrentham, Mass.
Dahl, G. W., Bristol, R. I.
Darling Valve & Mfg. Co., Williamsport, Pa.
Davis Regulator Co., Chicago, Ill.
Defender Instrument & Regulator Co., Boody, Ill.
De Zurik Corp., Sartell, Minn.
Eclipse Fuel Engineering Co., Rockford, Ill.
Edward Valves, Inc., East Chicago, Ind.
Farris Flexible Valve Corp., Palisades Park, N. J.
Fischer & Porter Co., Hatboro, Pa.
Fisher Governor Co., Marshalltown, Ia.
Foster Engineering Co., Union, N. J.
Foxboro Co., Foxboro, Mass.
Fulton Sylphon Div., Robertshaw-Fulton Controls Co., Knoxville, Tenn.
Gardner-Denver Co., Quincy, Ill.
General Controls Co., Glendale, Calif.
Greenwood Valve Div. of Vernon Tool Co., Ltd., Alhambra, Calif.
Hammel-Dahl, Div. of General Controls Co., Warwick, R. I.
Hanna Engineering Wks., Chicago, Ill.
Hills-McCanna Co., Chicago, Ill.
Homestead Valve Mfg. Co., Coraopolis, Pa.
Hunt & Son, Inc., C. B., Salem, O.
Illinois Engineering Products, American Air Filter Co., Inc., Louisville, Ky.
Jordan Corp., Div. of OPW Corp., Cincinnati.
Keckley Co., O. C., Skokie, Ill.
Kennedy Valve Mfg. Co., The, Elmira, N. Y.
Kieley & Mueller, Inc., Middletown, N. Y.
Klipfel Valves, Inc., Hamilton, O.
Ladish Co., Cudahy, Wis.
Ledeen Mfg. Co., El Monte, Calif.
Leslie Co., Lyndhurst, N. J.
Ludlow Valve Mfg. Co., Inc., Troy, N. Y.
Lunkenheimer Co., Cincinnati, O.
McAlear Mfg. Co., Chicago, Ill.
Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.
Minneapolis-Honeywell Regulator Co., Industrial Div., Philadelphia, Pa.
Modern Engineering Co., St. Louis, Mo.
Norwalk Valve Div., Eclipse Fuel Engineering Co., Rockford, Ill.
P-K Industries, Inc., North Arlington, N. J.
Paul Valve Corp., New York, N. Y.
Philadelphia Gear Corp., Philadelphia, Pa.
Powell Co., Wm., The, Cincinnati, O.
Powers Regulator Co., Skokie, Ill.
R.K.L. Valve & Mfg. Co., Maple Shade, N. J.
Republic Mfg. Co., Cleveland, O.
Rockwell Mfg. Co., Meter and Valve Div., Pittsburgh, Pa.
Rockwell Co., W. S., Fairfield, Conn.
Rockwood Sprinkler Co., Worcester, Mass.
Schade Valve Mfg. Co., Philadelphia, Pa.

Sinclair-Collins Valve Co., Akron, O.
Skinner Electric Valve Div., The Skinner Chuck Co., New Britain, Conn.
Smith Co., S. Morgan, York, Pa.
Squires Co., C. E., The, Cleveland, O.
Taylor Instrument Companies, Rochester, N. Y.
Trerice Co., H. O., Detroit, Mich.
Uniflow Valve Corp., Cranford, N. J.
Velan Valve Corp., Plattsburgh, N. Y.
Walworth Co., New York, N. Y.
Wedgeplug Valve Co., Div. of Stockham Valves & Fittings, Birmingham, Ala.
Westinghouse Air Brake Co., Industrial Products Div., Wilmerding, Pa.
Wilson Engineering Corp., Chicago, Ill.
Worcester Valve Co., Inc., Worcester, Mass.

VALVES, ALTITUDE

Cla-Val Co., Newport Beach, Calif.
Davis Regulator Co., Chicago, Ill.
Foster Engineering Co., Union, N. J.
Golden Anderson Valve Specialty Co., Pittsburgh, Pa.
Ross Valve Mfg. Co., Inc., Troy, N. Y.

VALVES, ANGLE

Alloy Steel Products Co., Linden, N. J. (Stainless steel)
American Car & Foundry Div. of ACF Industries, Inc., New York, N. Y.
Anderson Brass Co., Detroit, Mich.
Anderson Metals Corp., Kansas City, Mo.
Atkomatic Valve Co., Inc., Indianapolis, Ind.
Automatic Switch Co., Florham Park, N. Y.
Automatic Timing & Controls, Inc., King of Prussia, Pa.
Beckett & Co., Inc., Thomas, Dallas, Tex.
Bordo Co., Inc., L. J., Glenside, Pa. (Plug)
California Brass Mfg. Co., Los Angeles, Calif.
Chapman Valve Mfg. Co., The, Indian Orchard, Springfield, Mass.
Chase Brass & Copper Co., Waterbury, Conn.
Cla-Val Co., Newport Beach, Calif.
Cleveland Brass Mfg. Co., The, Kinsman, O.
Conoflow Corp., Subsidiary of Walworth Co., Philadelphia, Pa.
Cooper Alloy Corp., Hillside, N. J.
Crane Co., Chicago, Ill.
Dahl, G. W., Bristol, R. I.
Defender Instrument & Regulator Co., Boody, Ill.
Dersch, Gesswein & Neuert, Inc., Chicago, Ill.
Detroit Controls Div., American-Standard, Stratford, Conn.
Deutsch Co., The, Los Angeles, Calif.
Duriron Co., The, Dayton, O. (acid resisting)
Edward Valves, Inc., East Chicago, Ind.
Fairbanks Co., The, New York, N. Y.
Farris Engineering Corp., Palisades Park, N. J.
Frick Co., Waynesboro, Pa.
Gas Machinery Co., Cleveland, O.
General American Valve Co., Corona Del Mar, Calif.
General Ceramics Corp., Keasbey, N. J. (porcelain; plastic, alumina)
Greer Hydraulics, Inc., Jamaica, N. Y.
Grinnell Co., Inc., Providence, R. I.
Grove Valve and Regulator Co., Oakland, Calif.
Hammel-Dahl, Div. of General Controls Co., Warwick, R. I.
Hammond Valve Corp., Hammond, Ind.
Haveg Industries, Inc., Wilmington, Del. (plastic and plastic body)
Henry Valve Co., Melrose Park, Ill.
Hills-McCanna Co., Chicago, Ill.
Homestead Valve Mfg. Co., Coraopolis, Pa.
Imperial Brass Mfg. Co., Chicago, Ill.
Jenkins Bros., New York, N. Y.
Kennedy Valve Mfg. Co. Elmira, N. Y.
Kerotest Mfg. Corp., Pittsburgh, Pa.
Ladish Co., Cudahy, Wis.
Leslie Co., Lyndhurst, N. J.
Lunkenheimer Co., Cincinnati, O.
Luzerne Rubber Co., Trenton, N. J. (Hard Rubber)
Manning, Maxwell & Moore, Inc., Stratford. Conn.
Marsh Heating Equipment Co., Skokie, Ill.
Marsh Valve Co., Dunkirk, N. Y.
McAlear Mfg. Co., Chicago, Ill.
McDonald Mfg. Co., A. Y., Dubuque, Ia.
Milwaukee Valve Co., Milwaukee, Wis.
Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.
Minneapolis-Honeywell Regulator Co., Industrial Div., Philadelphia, Pa.
Morse-Smith-Morse, Inc., Watertown, Mass.
Mueller Brass Co., Port Huron, Mich.
Nibco, Inc., Elkhart, Ind.
Nuclear & Power Equipment Corp., S. San Francisco, Calif.
OPW Corp., Cincinnati, O.
Ohio Brass Co., Mansfield, O.
Ohio Injector Co., Wadsworth, O.
Okadee Co., Chicago, Ill.
Pittsburgh Valve Co., Reedsville, W. Va.
Powell Co., Wm., Cincinnati, O.
R-P & C Valve Div., American Chain & Cable Co., Inc., Reading, Pa.
Sarcotherm Controls, Inc., New York, N. Y.
Schaible Co., The, Mariemont, O.
Schutte and Koerting Co., Cornwells Heights, Bucks County, Pa.
Scott Valve Mfg. Co., Detroit, Mich.
Squires Co., C. E., The, Cleveland, O.
Stockham Valves & Fittings, Birmingham, Ala.
Strahman Valves, Inc., New York, N. Y.
Superior Valve & Fittings Co., Pittsburgh, Pa.
Uniflow Valve Corp., Cranford, N. J.
Vacuum-Electronic Engineering Co., New Hyde Park, L. I., N. Y.
Valley Foundry & Machine Works, Inc., Fresno, Calif.
Vanton Pump & Equipment Corp., Hillside, N. J. (plastic)
Velan Valve Corp., Plattsburgh, N. Y.
Vogt Machine Co., Henry, Louisville, Ky.
Walworth Co., New York, N. Y.
White Flomatic Corp., Hoosick Falls, N. Y.

VALVES, AUTOMATIC SHUTOFF WITH MANUAL RESET

A-P Controls Div., Controls Co. of America, Milwaukee, Wis.
Automatic Switch Co., Florham Park, N. J.
Bailey Co., Chas. M., San Francisco, Calif.
Baso, Inc., Milwaukee, Wis.
Black, Sivalls & Bryson, Inc., Kansas City, Mo.
Chaplin-Fulton Mfg. Co., Pittsburgh, Pa.
Cla-Val Co., Newport Beach, Calif.
Coppus Engineering Corp., Worcester, Mass.
Dahl, G. W., Bristol, R. I.
Davis Regulator Co., Chicago, Ill.
Eclipse Fuel Engineering Co., Rockford, Ill.
Electronics Corp. of America, Cambridge, Mass.
Fisher Governor Co., Marshalltown, Ia.
Foster Engineering Co., Union, N. J.
Fulton Sylphon Div., Robertshaw-Fulton Controls Co., Knoxville, Tenn.
General Controls Co., Glendale, Calif.
Greenwood Valve Div. of Vernon Tool Co., Ltd., Alhambra, Calif.
Jordan Corp., Div. of OPW Corp., Cincinnati.
Maxon Premix Burner Co., Muncie, Ind.
McRae Specialty Co., Don, Glendale, Calif.
North American Mfg. Co., Cleveland, O.
Norwalk Valve Div., Eclipse Fuel Engineering Co., Rockford, Ill.
OPW Corp., Cincinnati, O.
P-K Industries Inc., North Arlington, N. J
Patrol Valve Co., The, Cleveland, O.
Penn Controls, Inc., Goshen, Ind.
Rockwell Co., W. S., Fairfield, Conn.
Ruggles-Klingemann Mfg. Co., Boston, Mass
Security Valves Corp., Glendale, Calif.
Semet-Solvay Engineering Div., Allied Chemical Corp., New York, N. Y.
Sinclair-Collins Valve Co., Akron, O.
Skinner Electric Valve Div., The Skinner Chuck Co., New Britain, Conn.
Spence Engineering Co., Inc., Walden, N. Y.
Squires Co., C. E., The, Cleveland, O.
Sullivan Valve & Engineering Co., Butte, Mont.
Thermac Co., Corona, Calif.
Valco, Inc., Cincinnati, O.
Watts Regulator Co., Lawrence, Mass.
White-Rodgers Co., St. Louis, Mo.

VALVES, AUTOMATIC, STOP AND CHECK

Chatleff Valve & Mfg. Co., Austin, Tex.
Cla-Val Co., Newport Beach, Calif.
Crane Co., Chicago, Ill.
Eclipse Fuel Engineering Co., Rockford, Ill.
Fairbanks Co., The, New York, N. Y.
Foster Engineering Co., Union, N. J.
Golden Anderson Valve Specialty Co., Pittsburgh, Pa.
Illinois Engineering Products, American Air Filter Co., Inc., Louisville, Ky.
McAlear Mfg. Co., Chicago, Ill.
Scott Valve Mfg. Co., Detroit, Mich.
Sinclair-Collins Valve Co., Akron, O.
Velan Valve Corp., Plattsburgh, N. Y.

VALVES, BACK PRESSURE

Associated Valve & Engineering Co., North Wales, Pa.
Atlas Valve Co., Newark, N. J.
Bailey Co., Charles M., San Francisco, Calif.
Black, Sivalls & Bryson, Inc., Kansas City, Mo.
Cash Co., A. W., Decatur, Ill.
Cash Valve Mfg. Corp., A. W., Decatur, Ill.
Chaplin-Fulton Mfg. Co., Pittsburgh, Pa.
Cla-Val Co., Newport Beach, Calif.
Cochrane Corp., Philadelphia, Pa.
Crane Co., Chicago, Ill.
Crosby Valve & Gage Co., Wrentham, Mass.
Dahl, G. W., Bristol, R. I.
Davis Regulator Co., Chicago, Ill.
Defender Instrument & Regulator Co., Boody, Ill.
Dersch, Gesswein & Neuert, Inc., Chicago, Ill.
Farris Engineering Corp., Palisades Park, N. J.
Fisher Governor Co., Marshalltown, Ia.
Foster Engineering Co., Union, N. J.
Granberg Corp., Oakland, Calif.
Hammel-Dahl, Div. of General Controls Co., Warwick, R. I.
Hershey Mfg. Co., Dedham, Mass.
Hubbell Corp., Mundelein, Ill.
Jordan Corp., Div. of OPW Corp., Cincinnati.
Josam Manufacturing Co., Michigan City, Ind.
Keckley Co., O. C., Skokie, Ill.
Kieley & Mueller, Inc., Middletown, N. Y.
Klipfel Valves, Inc., Hamilton, O.
Linde Co., Div. of Union Carbide Corp., New York, N. Y.
Manning, Maxwell & Moore, Inc., Stratford, Conn.
Mason-Neilan, Div. of Worthington Corp., Norwood, Mass.
McAlear Mfg. Co., Chicago, Ill.
Milton Roy Co., Philadelphia, Pa.
Norwalk Valve Div., Eclipse Fuel Engineering Co., Rockford, Ill.
Pokorney Mfg. Co., Chicago, Ill.
Ross Valve Mfg. Co., Inc., Troy, N. Y.
Ruggles-Klingemann Mfg. Co., Boston, Mass.
Schancke, Inc., Evansville, Ind.
Schutte and Koerting Co., Buck County, Pa.
Spence Engineering Co., Inc., Walden, N. Y.
Squires Co., C. E., The, Cleveland, O.
Stickle Steam Specialties Co., Indianapolis, Ind.
Stockham Valves & Fittings, Birmingham, Ala.
Uniflow Valve Corp., Cranford, N. J.
Zurn Industries, Inc., Erie, Pa.

VALVES, BALANCING, FOR FORCED HOT WATER HEATING SYSTEMS

Bell & Gossett Co., Morton Grove, Ill.
Detroit Controls Div. of American-Standard, Detroit, Mich.
Econo Products Co., Inc., Div. of Viking Instruments, Inc., East Haddam, Conn.
G & H Mfg. Co., Philadelphia, Pa.
Hammond Valve Corp., Hammond, Ind.
Hoffman Specialty Mfg. Corp., Indianapolis, Ind.
Illinois Engineering Products, American Air Filter Co., Inc., Louisville, Ky.
Maid-O'-Mist, Inc., Chicago, Ill.
Marsh Heating Equipment Co., Skokie, Ill.
Marsh Valve Co., Dunkirk, N. Y.
Milwaukee Valve Co., Milwaukee, Wis.
Ohio Brass Co., Mansfield, O.
Panel Heat, Inc., Copiague, N. Y.
Quality Specialty Co., Inc., Camden, N. J.
Sarco Co., Inc., New York, N. Y.
Sarcotherm Controls, Inc., New York, N. Y.
Thrush & Co., H. A., Peru, Ind.
Trane Co., The, La Crosse, Wis.
Triplex Heating Specialty Co., Inc., Peru, Ind.
Welsbach Corp., The, Kitson Valve Div., Philadelphia, Pa.

VALVES, BALL TYPE

Cardox Corp., Chicago, Ill.
Carpenter Sales Corp., Cleveland, O.

Chemtrol, Lynwood, Calif.
Edward Valves, Inc., East Chicago, Ind.
Fairbanks Co., The, New York, N. Y.
Greer Hydraulics, Inc., Jamaica, N. Y.
Jamesbury Corp., Worcester, Mass.
Lunkenheimer Co., Cincinnati, O.
Multiplex Mfg. Co., Berwick, Pa.
Nuclear & Power Equipment Corp., S. San Francisco, Calif.
Ohio Injector Co., Wadsworth, O.
P-K Industries, Inc., North Arlington, N. J.
Paul Valve Corp., New York, N. Y.
Rockwell Co., W. S., Fairfield, Conn.
Rockwood Sprinkler Co., Worcester, Mass.
Smith Co., S. Morgan, York, Pa.
W-K-M, Div. of ACF Industries, Inc., Houston, Tex.
Walworth Co., New York, N. Y.
Worcester Valve Co., Inc., Worcester, Mass.

VALVES, BAR STOCK

Alloy Steel Products Co., Linden, N. J. (stainless steel)
Associated Valve & Engineering Co., North Wales, Pa.
Atkomatic Valve Co., Inc., Indianapolis, Ind.
Autoclave Engineers Sales Corp., Erie, Pa.
Carpenter Sales Corp., Cleveland, O.
Circle Seal Products Co., Inc., Pasadena, Calif.
Conoflow Corp., Subsidiary of Walworth Co., Philadelphia, Pa.
Crane Co., Chicago, Ill.
Dahl, G. W., Bristol, R. I.
Deutsch Co., The, Los Angeles, Calif.
Farris Engineering Corp., Palisades Park, N. J.
Foxboro Co., Foxboro, Mass.
General-American Valve Co., Corona Del Mar, Calif.
Greer Hydraulics, Inc., Jamaica, N. Y.
Grove Valve and Regulator Co., Oakland, Calif.
Guardian Products Corp., Michigan City, Ind.
Hammel-Dahl, Div. of General Controls Co., Warwick, R. I.
Jamesbury Corp., Worcester, Mass.
Kerotest Mfg. Co., Pittsburgh, Pa.
Lunkenheimer Co., Cincinnati, O.
National Airoil Burner Co., Inc., Philadelphia.
P-K Industries, Inc., North Arlington, N. J.
Paul Valve Corp., New York, N. Y.
Powell Co., Wm., The, Cincinnati, O.
R-P & C Valve Div., American Chain & Cable Co., Inc., Reading, Pa.
Rockwood Sprinkler Co., Worcester, Mass.
Shank Co., Cyrus, Chicago, Ill.
Star Stainless Screw Co., Paterson, N. J.
Uehling Instrument Co., Paterson, N. J.
Uniflow Valve Corp., Cranford, N. J.
Vacuum-Electronic Engineering Co., New Hyde Park, L. I., N. Y.
Walworth Co., New York, N. Y.
Weatherhead Co., The, Ft. Wayne Div., Ft. Wayne, Ind.
Worcester Valve Co., Inc., Worcester, Mass.

VALVES, BLOW-OFF

Berde Co., Inc., L. J., Glenside, Pa.
Chatleff Valve & Mfg. Co., Austin, Tex.
Cash Valve Mfg. Corp., A. W., Decatur, Ill.
Crane Co., Chicago, Ill.
Defender Instrument & Regulator Co., Boody, Ill.
Edward Valves, Inc., East Chicago, Ind.
Everlasting Valve Co., Jersey City, N. J.
Fairbanks Co., The, New York, N. Y.
Farris Engineering Corp., Palisades Park, N. J.
Gato Valve Co., Pittsburgh, Pa.
General-American Valve Co., Corona Del Mar, Calif.
Henszey Co., Watertown, Wis.
Homestead Valve Mfg. Co., Coraopolis, Pa.
Jenkins Bros., New York, N. Y.
Ludlow Valve Mfg. Co., Inc., Troy, N. Y.
Lunkenheimer Co., Cincinnati, O.
Madden Corp., The, Chicago, Ill.
Manning, Maxwell & Moore, Inc., Stratford, Conn.
McDonnell & Miller, Inc., Chicago, Ill.
Norgren Co., C. A., Englewood, Colo.
Ohio Injector Co., Wadsworth, O.
Okadee Co., Chicago, Ill.
P-K Industries, Inc., North Arlington, N. J.
Paul Valve Corp., New York, N. Y.
Powell Co., Wm., The, Cincinnati, O.
R-P & C Valve Div., American Chain & Cable Co., Inc., Reading, Pa.
Shank Co., Cyrus, Chicago, Ill.
Strong, Carlisle & Hammond, Cleveland, O.
Velan Valve Corp., Plattsburgh, N. Y.
Wilson Engineering Corp., Chicago, Ill.
Yarnall-Waring Co., Philadelphia, Pa.

VALVES, BOILER, NON-RETURN

Crane Co., Chicago, Ill.
Edward Valves, Inc., East Chicago, Ind.
Foster Engineering Co., Union, N. J.
Golden Anderson Valve Specialty Co., Pittsburgh, Pa.
Jenkins Bros., New York, N. Y.
Kennedy Valve Mfg. Co., The, Elmira, N. Y.
Lunkenheimer Co., Cincinnati, O.
McAlear Mfg. Co., Chicago, Ill.
Nuclear & Power Equipment Corp., S. San Francisco, Calif.
Ohio Injector Co., Wadsworth, O.
Powell Co., Wm., The, Cincinnati, O.
R-P & C Valve Div., American Chain & Cable Co., Inc., Reading, Pa.
Schutte & Koerting Co., Buck County, Pa.
Scott Valve Mfg. Co., Detroit, Mich.
Velan Valve Corp., Plattsburgh, N. Y.
Walworth Co., New York, N. Y.

VALVES, BRAZED END

Fairbanks Co., The, New York, N. Y.
Fulton Sylphon Div., Robertshaw-Fulton Controls Co., Knoxville, Tenn.
Hammond Valve Corp., Hammond, Ind.
Homestead Valve Mfg. Co., Coraopolis, Pa.
Jenkins Bros., New York, N. Y.
Ohio Brass Co., Mansfield, O.
Ohio Injector Co., Wadsworth, O.
Pittsburgh Valve Co., Reedsville, W. Va.
R-P & C Valve Div., American Chain & Cable Co., Inc., Reading, Pa.
Superior Valve & Fittings Co., Pittsburgh.
Walworth Co., New York, N. Y.

VALVES, BUTTERFLY

Airaterra (Roylyn Products), Glendale, Calif.
Allis-Chalmers Mfg. Co., Milwaukee, Wis.
Builders-Providence Div., B-I-F Industries Inc., Providence, R. I.
Conoflow Corp., Subsidiary of Walworth Co., Philadelphia, Pa.
Continental Equipment Co., Div. of Fisher Governor Co., Coraopolis, Pa.
Crane Co., Chicago, Ill.
Darling Valve & Mfg. Co., Williamsport, Pa.
Davis Regulator Co., Chicago, Ill.
Eclipse Fuel Engineering Co., Rockford, Ill.
Fabri-Valve Co. of America, Portland, Ore.
Fisher Govenor Co., Marshalltown, Ia.
Foxboro Co., Foxboro, Mass.
Gas Machinery Co., Cleveland, O.
General Ceramics Corp., Keasbey, N. J. (chemical stoneware, plastic)
General Controls Co., Glendale, Calif., and Skokie, Ill.
Hagan Chemicals & Controls, Inc., Pittsburgh, Pa.
Hammel-Dahl, Div. of General Controls Co., Warwick, R. I.
Hauck Mfg. Co., Brooklyn, N. Y.
Keystone Valve Corp., Houston, Tex.
Ladish Co., Cudahy, Wis.
Ladish Co., Tri-Clover Div., Kenosha, Wis.
Ludlow Valve Mfg. Co., Inc., Troy, N. Y. (all iron for gas service)
Mason-Neilan Div. of Worthington Corp., Norwood, Mass.
Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.
Minneapolis-Honeywell Regulator Co., Industrial Div., Philadelphia, Pa.
National Valve & Mfg. Co., Pittsburgh, Pa.
North American Mfg. Co., Cleveland, O.
Norwalk Valve Div., Eclipse Fuel Engineering Co., Rockford, Ill.
Nuclear & Power Equipment Corp., S. San Francisco, Calif.
Powell Co., Wm., The, Cincinnati, O.
Pratt Co., Henry, Chicago, Ill.
Rockwell Co., W. S., Fairfield, Conn.
Schurs Oil Burner Co., Los Angeles, Calif.
Schutte & Koerting Co., Buck County, Pa.
Semet-Solvay Engineering Div., Allied Chemical Corp., New York, N. Y.
Smith Co., S. Morgan, York, Pa.
Whittaker Controls, A Div. of Telecomputing Corp., Los Angeles, Calif.
Worthington Corp., East Orange, N. J.
Yuba Mfg. Div., Yuba Consolidated Industries, Inc., Benicia, Calif.

VALVES, BYPASS, WITH PROVISIONS FOR SOME CIRCULATION WHEN CLOSED

Chatleff Valve & Mfg. Co., Austin, Tex.
Continental Equipment Co., Div. of Fisher Governor Co., Coraopolis, Pa.
Dahl, G. W., Bristol, R. I.
Fulflo Specialties Co., Inc., The, Blanchester, O.
Jenkins Bros., New York, N. Y.
Lunkenheimer Co., Cincinnati, O.
Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.
Morrison Brothers Co., Dubuque, Ia.
Mueller Brass Co., Port Huron, Mich.
OPW Corp., Cincinnati, O.
Ohio Brass Co., Mansfield, O.
Powell Co., Wm., The, Cincinnati, O.
Ranco Inc., Columbus, O.
Schutte & Koerting Co., Buck County, Pa.
Skinner Electric Valve Div., The Skinner Chuck Co., New Britain, Conn.
Stockham Valves & Fittings, Birmingham, Ala.
Uniflow Valve Corp., Cranford, N. J.
Velan Valve Corp., Plattsburgh, N. Y.

VALVES, CHECK — CHECK UNIT ONLY, FOR USE WITH PIPE FITTINGS

Durabla Mfg. Co., New York, N. Y.
Harman Equipment Co., Los Angeles, Calif.
Jordan Corp., Div. of OPW Corp., Cincinnati.
OPW Corp., Cincinnati, O.
Superior Valve & Fittings Co., Pittsburgh, Pa.

VALVES, CHECK

Airaterra (Roylyn Products), Glendale, Calif.
Alloy Steel Products Co., Linden, N. J. (stainless steel)
American Car & Foundry Div. of ACF Industries, Inc., New York, N. Y.
American Hard Rubber Co., Div. of Amerace Corp., Butler, N. J. (Hard rubber)
Aminco Refrigeration Products, American Injector Co., Detroit, Mich. (Refrigeration)
Anderson Brass Co., Detroit, Mich.
Associated Valve & Engineering Corp., North Wales, Pa.
Autoclave Engineers Sales Corp., Erie, Pa.
Barrett Haentjens & Co., Hazleton, Pa.
Beacon Brass Co., Waltham, Mass.
Catawissa Valve & Fittings Co., Catawissa, Pa.
Chapman Valve Mfg. Co., The, Indian Orchard, Springfield, Mass.
Chase Brass & Copper Co., Waterbury, Conn.
Chatleff Valve & Mfg. Co., Austin, Tex.
Chemtrol, Lynwood, Calif.
Circle Seal Products Co., Inc., Pasadena, Calif.
Cla-Val Co., Newport Beach, Calif.
Clayton Mark & Co., Evanston, Ill.
Cochrane Corp., Philadelphia, Pa.
Colonial Plastics Mfg. Co., Industrial Div., Cleveland, O. (plastic)
Cooper Alloy Corp., Hillside, N. J.
Crane Co., Chicago, Ill.
Dahl, G. W., Bristol, R. I.
Darling Valve & Mfg. Co., Williamsport, Pa.
Davis Regulator Co., Chicago, Ill.
Dersch, Gesswein & Neuert, Inc., Chicago, Ill.
Detroit Controls Div., American-Standard, Stratford, Conn.
Durabla Mfg. Co., New York, N. Y.
Duriron Co., Inc., The, Dayton, O. (acid resisting)
Dynametrics Corp., Burlington, Mass.
Eclipse Fuel Engineering Co., Rockford, Ill.
Eddy Valve Co., Waterford, N. Y.
Edward Valves, Inc., East Chicago, Ind.
Fabri-Valve Co. of America, Portland, Ore.
Fairbanks Co., The, New York, N. Y.
Foster Engineering Co., Union, N. J.
Gas Machinery Co., Cleveland, O.
General Ceramics Corp., Keasbey, N. J. (ceramics)
Golden Anderson Valve Specialty Co., Pittsburgh, Pa.
Greenwood Valve Div. of Vernon Tool Co., Ltd., Alhambra, Calif.
Greer Hydraulics, Inc., Jamaica, N. Y.
Grinnell Co., Inc., Providence, R. I.
Hammond Valve Corp., Hammond, Ind.
Harman Equipment Co., Los Angeles, Calif.
Henry Valve Co., Melrose Park, Ill.
Hersey Mfg. Co., Dedham, Mass.

Imperial Brass Mfg. Co., Chicago, Ill.
Integral Corp., Hicksville, Long Island, N. Y.
Jenkins Bros., New York, N. Y.
Jordan Corp., Div. of OPW Corp., Cincinnati.
Kenmore Machine Products, Inc., Lyons, N. Y.
Kennedy Valve Mfg. Co., Elmira, N. Y.
Kerotest Mfg. Co., Pittsburgh, Pa.
Keystone Valve Corp., Houston, Tex.
LaBour Co., Inc., The, Elkhart, Ind.
Ladish Co., Cudahy, Wis.
Ladish Co., Tri-Clover Div., Kenosha, Wis.
LaFavorite Rubber Mfg. Co., Hawthorne, N. J.
Lead Lined Iron Pipe Co., Wakefield, Mass. (Lead lined)
Ludlow Valve Mfg. Co., Inc., Troy, N. Y.
Lunkenheimer Co., Cincinnati, O.
Luzerne Rubber Co., Trenton, N. J. (Hard rubber & rigid PVC)
Manning, Maxwell & Moore, Inc., Stratford, Conn.
Mansfield & Green Inc., Cleveland, O.
McDonald Mfg. Co., A. Y., Dubuque, Ia.
Miller Valve Co., Inc., Pittsburgh, Pa. (Silent)
Milwaukee Valve Co., Milwaukee, Wis.
Morse-Smith-Morse, Inc., Watertown, Mass.
Mueller Brass Co., Port Huron, Mich.
Myers & Bro. Co., F. E., The, Ashland, O.
Norwalk Valve Div., Eclipse Fuel Engineering Co., Rockford, Ill.
OPW Corp., Cincinnati, O.
Ohio Brass Co., Mansfield, O.
Ohio Injector Co., Wadsworth, O.
Pennsylvania Pump & Compressor Co., Easton, Pa.
Phillips & Co., H. A., Chicago, Ill.
Pokorney Mfg. Co., Chicago, Ill.
Powell Co., Wm., The, Cincinnati, O.
R-P & C Valve Div., American Chain & Cable Co., Inc., Reading, Pa.
Remco, Inc., Zelienople, Pa. (high pressure & low pressure)
Republic Mfg. Co., Cleveland, O.
Research Vacuum Supply Co., Chicago, Ill.
Rockwell Co., W. S., Fairfield, Conn.
Schaible Co., The, Mariemont, O.
Schutte and Koerting Co., Cornwells Heights, Bucks County, Pa.
Scott Valve Mfg. Co., Detroit, Mich.
Sealol Corp., Providence, R. I.
Sealed Unit Parts Co., Inc., New York, N. Y.
Sinclair-Collins Valve Co., Akron, O.
Smith Co., S. Morgan, York, Pa.
Smolensky Valve Co., Bedford, O.
Stockham Valves & Fittings, Birmingham, Ala.
Sullivan Valve & Engineering Co., Butte, Mont.
Superior Valve and Fittings Co., Pittsburgh.
Tesco, Inc., Tulsa, Okla.
Universal Valve Co., Elizabeth, N. J.
Valves, Inc., F. G., Milwaukee, Wis.
Vanton Pump & Equipment Corp., Hillside, N. J. (plastic)
Velan Valve Corp., Plattsburgh, N. Y.
Walworth Co., New York, N. Y.
Watkins Co., J. E., Maywood, Ill.
Watts Regulator Co., Lawrence, Mass.
Whittaker Controls, A Div. of Telecomputing Corp., Los Angeles, Calif.
Williams Gauge Co., Inc., The, Pittsburgh, Pa. (silent)

VALVES, CHECK, BRONZE

Airaterra (Roylyn Products), Glendale, Calif.
Anderson Brass Co., Detroit, Mich.
Barrett Haentjens & Co., Hazleton, Pa.
Chapman Valve Mfg. Co., The, Indian Orchard, Springfield, Mass.
Chase Brass & Copper Co., Waterbury, Conn.
Circle Seal Products Co., Inc., Pasadena, Calif.
Cla-Val Co., Newport Beach, Calif.
Clayton Mark & Co., Evanston, Ill.
Crane Co., Chicago, Ill.
Detroit Controls Div., American-Standard, Stratford, Conn.
Eclipse Fuel Engineering Co., Rockford, Ill.
Fairbanks Co., The, New York, N. Y.
Foster Engineering Co., Union, N. J.
Grinnell Co., Inc., Providence, R. I.
Grove Valve & Regulator Co., Oakland, Calif.
Hammond Valve Corp., Hammond, Ind.
Henry Valve Co., Melrose Park, Ill.
Imperial Brass Mfg. Co., Chicago, Ill.
Jenkins Bros., New York, N. Y.
Jordan Corp., Div. of OPW Corp., Cincinnati.
Kennedy Valve Mfg. Co., The, Elmira, N. Y.
Ladish Co., Cudahy, Wis.
Lancaster Pump & Mfg. Co., Lancaster, Pa.
Ludlow Valve Mfg. Co., Inc., Troy, N. Y.
Lunkenheimer Co., Cincinnati, O.
Manning, Maxwell & Moore, Inc., Stratford, Conn.
Marsh Valve Co., Dunkirk, N. Y.
McDonald Mfg. Co., A. Y., Dubuque, Ia.
Miller Valve Co., Inc., Pittsburgh, Pa.
Milwaukee Valve Co., Milwaukee, Wis.
Morrison Brothers Co., Dubuque, Ia.
Morse-Smith-Morse Co., The, Watertown, Mass.
Mueller Brass Co., Port Huron, Mich.
Myers & Bro. Co., F. E., The, Ashland, O.
Nibco, Inc., Elkhart, Ind.
Norwalk Valve Div., Eclipse Fuel Engineering Co., Rockford, Ill.
OPW Corp., Cincinnati, O.
Ohio Brass Co., Mansfield, O.
Ohio Injector Co., Wadsworth, O.
Pittsburgh Valve Co., Reedsville, W. Va.
Pokorney Mfg. Co., Chicago, Ill.
Powell Co., Wm., The, Cincinnati, O.
R-P & C Valve Div., American Chain & Cable Co., Inc., Reading, Pa.
Republic Mfg. Co., Cleveland, O.
Rockford Brass Works, Rockford, Ill.
Rockwell Co., W. S., Fairfield, Conn.
Schaible Co., The, Mariemont, O.
Schutte & Koerting Co., Cornwells Heights, Bucks County, Pa.
Scott Valve Mfg. Co., Detroit, Mich.
Sealol Corp., Providence, R. I.
Sims Pump Valve Co., Hoboken, N. J.
Sinclair-Collins Valve Co., Akron, O.
Smolensky Valve Co., Bedford, O.
Stockham Valves & Fittings, Birmingham, Ala.
Superior Valve & Fittings Co., Pittsburgh, Pa.
Tesco, Inc., Tulsa, Okla.
Valves, Inc., F. G., Milwaukee, Wis.
Walworth Co., New York, N. Y.
Watts Regulator Co., Lawrence, Mass.
White Flomatic Corp., Hoosick Falls, N. Y.
Williams Gauge Co., Inc., Pittsburgh, Pa.

VALVES, CHECK, IRON

Airaterra (Roylyn Products), Glendale, Calif.
Barrett Haentjens & Co., Hazleton, Pa.
Catawissa Valve & Fittings Co., Catawissa, Pa.
Chapman Valve Mfg. Co., The, Indian Orchard, Springfield, Mass.
Cla-Val Co., Newport Beach, Calif.
Clayton Mark & Co., Evanston, Ill.
Clow & Sons, Inc., James B., Chicago, Ill.
Crane Co., Chicago, Ill.
Darling Valve & Mfg. Co., Williamsport, Pa.
Dersch, Gesswein & Neuert, Inc., Chicago, Ill.
Fairbanks Co., The, New York, N.. Y.
Foster Engineering Co., Union, N. J.
Frick Co., Waynesboro, Pa.
Grinnell Co., Inc., Providence, R. I.
Grove Valve & Regulator Co., Oakland, Calif.
Henry Valve Co., Melrose Park, Ill.
Jenkins Bros., New York, N. Y.
Jordan Corp., Div. of OPW Corp., Cincinnati.
Kennedy Valve Mfg. Co., The, Elmira, N. Y.
Ludlow Valve Mfg. Co., Inc., Troy, N. Y.
Lunkenheimer Co., Cincinnati, O.
M & H Valve & Fittings Co., Div. of Walworth Co., Anniston, Ala.
McDonald Mfg. Co., A.Y., Dubuque, Ia.
Miller Valve Co., Inc., Pittsburgh, Pa.
Mueller Co., Decatur, Ill.
Norwalk Valve Div., Eclipse Fuel Engineering Co., Rockford, Ill.
OPW Corp., Cincinnati, O.
Ohio Injector Co., Wadsworth, O.
Pennsylvania Pump & Compressor Co., Easton, Pa.
Phillips & Co., H. A., Chicago, Ill.
Powell Co., Wm., The, Cincinnati, O.
R-P & C Valve Div., American Chain & Cable Co., Reading, Pa.
Ruggles-Klingemann Mfg. Co., Boston, Mass.
Saran Lined Pipe Co., Ferndale, Mich. (saran lined)
Schutte & Koerting Co., Cornwells Heights, Bucks County, Pa.
Scott Valve Mfg. Co., Detroit, Mich.
Sealol Corp., Providence, R. I.
Sinclair-Collins Valve Co., Akron, O.
Smolensky Valve Co., Bedford, O.
Stockham Valves & Fittings, Birmingham, Ala.
Tesco, Inc., Tulsa, Okla.
Valves, Inc., F. G., Milwaukee, Wis.
Vilter Mfg. Co., The, Milwaukee, Wis.
Walworth Co., New York, N. Y.
Williams Gauge Co., Inc., The, Pittsburgh, Pa.

VALVES, CHECK, STEEL

Airaterra (Roylyn Products), Glendale, Calif.
Associated Valve & Engineering Co., North Wales, Pa.
Catawissa Valve & Fittings Co., Catawissa, Pa.
Chapman Valve Mfg. Co., The, Indian Orchard, Springfield, Mass.
Circle Seal Products Co., Inc., Pasadena, Calif.
Cla-Val Co., Newport Beach, Calif.
Clayton Mark & Co., Evanston, Ill.
Crane Co., Chicago, Ill.
Edward Valves, Inc., East Chicago, Ind.
Fabri-Valve Co. of America, Portland, Ore.
Foster Engineering Co., Union, N. J.
Greer Hydraulics, Inc., Jamaica, N. Y.
Grove Valve & Regulator Co., Oakland, Calif.
Henry Valve Co., Melrose Park, Ill.
Jenkins Bros., New York, N. Y.
Lunkenheimer Co., Cincinnati, O.
Manning, Maxwell & Moore, Inc., Stratford, Conn.
Mansfield & Green, Inc., Cleveland, O.
Miller Valve Co., Inc., Pittsburgh, Pa.
Norwalk Valve Div., Eclipse Fuel Engineering Co., Rockford, Ill.
Nuclear & Power Equipment Corp., S. San Francisco, Calif.
Ohio Injector Co., Wadsworth, O.
Pennsylvania Pump & Compressor Co., Easton, Pa.
Powell Co., Wm., The, Cincinnati, O.
R-P & C Valve Div., American Chain & Cable Co., Inc., Reading, Pa.
Republic Mfg. Co., Cleveland, O.
Ruggles-Klingemann Mfg. Co., Boston, Mass.
Saran Lined Pipe Co., Ferndale, Mich. (saran lined)
Schutte & Koerting Co., Cornwells Heights, Bucks County, Pa.
Sealol Corp., Providence, R. I.
Sinclair-Collins Valve Co., Akron, O.
Smolensky Valve Co., Bedford, O.
Stockham Valves & Fittings, Birmingham, Ala.
Tesco, Inc., Tulsa, Okla.
Velan Valve Corp., Plattsburgh, N. Y.
Vernon Tool Co., Ltd., Alhambra, Calif.
Vogt Machine Co., Henry, Louisville, Ky.
Walworth Co., New York, N. Y.
Watkins Co., J. E., Maywood, Ill.
Williams Gauge Co., Inc., The, Pittsburgh.

VALVES, COMPRESSOR

Binks Mfg. Co., Chicago, Ill.
Cash Valve Mfg. Corp., A. W., Decatur, Ill.
Detroit Controls Div., American-Standard, Stratford, Conn.
Detroit Stamping Co., Detroit, Mich.
Farris Engineering Corp., Palisades Park, N. J.
Frick Co., Waynesboro, Pa.
Henry Valve Co., Melrose Park, Ill.
Imperial Brass Mfg. Co., Chicago, Ill.
Jenkins Bros., New York, N. Y.
Jordan Corp., Div. of OPW Corp., Cincinnati.
Kerotest Mfg. Co., Pittsburgh, Pa.
Ladish Co., Tri-Clover Div., Kenosha, Wis.
Mueller Brass Co., Port Huron, Mich.
OPW Corp., Cincinnati, O.
Ohio Injector Co., Wadsworth, O.
Pennsylvania Pump & Compressor Co., Easton, Pa.
Pokorney Mfg. Co., Chicago, Ill.
Shank Co., Cyrus, Chicago, Ill.
Superior Valve and Fittings Co., Pittsburgh, Pa.
Techno Corp., Erie, Pa.
Vilter Mfg. Co., The, Milwaukee, Wis.
Voss Co., J. H. H., Inc., New York, N. Y. (suction and discharge)
Williams Gauge Co., Inc., The, Pittsburgh, Pa.

VALVES, CYLINDER OPERATED

Airmatic Valve, Inc., Cleveland, O.
Associated Valve & Engineering Co., North Wales, Pa.
Automatic Switch Co., Florham Park, N. J.
Cardox Corp., Chicago, Ill.

Chapman Valve Mfg. Co., The, Indian Orchard, Springfield, Mass.
Clow & Sons, Inc., James B., Chicago, Ill.
Conoflow Corp., Subsidiary of Walworth Co., Philadelphia, Pa.
Continental Equipment Co., Div. of Fisher Governor Co., Coraopolis, Pa.
Crane Co., Chicago, Ill.
Dahl, G. W., Bristol, R. I.
Darling Valve & Mfg. Co., Williamsport, Pa.
De Zurik Corp., Sartell, Minn.
Everlasting Valve Co., Jersey City, N. J.
Fabri-Valve Co. of America, Portland, Ore.
Fischer & Porter Co., Hatboro, Pa.
Foxboro Co., Foxboro, Mass.
Hammel-Dahl, Div. of General Controls Co., Warwick, R. I.
Homestead Valve Mfg. Co., Coraopolis, Pa.
Hunt & Son, Inc., C. B., Salem, O.
Jamesbury Corp., Worcester, Mass.
Jenkins Bros., New York, N. Y.
Ladish Co., Cudahy, Wis.
Leslie Co., Lyndhurst, N. J.
Linde Co., Div. of Union Carbide Corp., New York, N. Y.
Ludlow Valve Mfg. Co., Inc., Troy, N. Y.
M & H Valve & Fittings Co., Div. of Walworth Co., Anniston, Ala.
Ohio Injector Co., Wadsworth, O.
Okadee Co., Chicago, Ill.
P-K Industries, Inc., North Arlington, N. J.
Paul Valve Corp., New York, N. Y.
Powell Co., Wm., The, Cincinnati, O.
Pratt Co., Henry, Chicago, Ill.
R.K.L. Valve & Mfg. Co., Maple Shade, N. J.
Rockwell Co., W. S., Fairfield, Conn.
Rockwell Mfg. Co., Meter & Valve Div., Pittsburgh, Pa.
Saran Lined Pipe Co., Ferndale, Mich. (saran lined)
Sinclair-Collins Valve Co., Akron, O.
Smith Co., S. Morgan, York, Pa.
Stockham Valves & Fittings, Birmingham, Ala.
Superior Valve & Fittings Co., Pittsburgh Pa.
Wedgeplug Valve Co., Div. of Stockham Valves & Fittings, Birmingham, Ala.
Worcester Valve Co., Inc., Worcester, Mass.

VALVES, DIAPHRAGM

(Diaphragm controller elements controls opening of valve)

A-P Controls Div., Controls Co. of America, Milwaukee, Wis.
American Hard Rubber Co., Div. of Amerace Corp., Butler, N. J.
Arco Products, Automotive Rubber Co., Detroit, Mich.
Associated Valve & Engineering Co., North Wales, Pa.
Atlas Valve Co., Newark, N. J.
Automatic Switch Co., Florham Park, N. J.
Bailey Co., Chas. M., San Francisco, Calif.
Bellofram Corp., Burlington, Mass.
Black,Sivalls & Bryson, Inc., Kansas City, Mo.
Bristol Co., The, Waterbury, Conn.
Cash Co., A. W., Decatur, Ill.
Cash Valve Mfg. Corp., A. W., Decatur, Ill.
Cla-Val Co., Newport Beach, Calif.
Conoflow Corp., Subsidiary of Walworth Co., Philadelphia, Pa.
Continental Equipment Co., Div. of Fisher Governor Co., Coraopolis, Pa.
Copes-Vulcan Div., Blaw-Knox Co., Erie, Pa.
Dahl, G. W., Bristol, R. I.
Defender Instrument & Regulator Co., Boody, Ill.
d'Este Div., Kaye & MacDonald, Inc., West Orange, N. J.
Eclipse Fuel Engineering Co., Rockford, Ill.
Fabri-Valve Co. of America, Portland, Ore.
Farris Engineering Corp., Palisades Park, N. J.
Farris Flexible Valve Corp., Palisades Park, N. J.
Fischer & Porter Co., Hatboro, Pa.
Fisher Governor Co., Marshalltown, Ia.
Foster Engineering Co., Union, N. J.
Foxboro Co., Foxboro, Mass.
Fulton Sylphon Div., Robertshaw-Fulton Controls Co., Knoxville, Tenn.
General Controls Co., Glendale, Calif.
Golden Anderson Valve Specialty Co., Pittsburgh, Pa.
Hills-McCanna Co., Chicago, Ill.
Hubbell Corp., Mundelein, Ill.
Johnson Service Co., Milwaukee, Wis.
Jordan Corp., Div. of OPW Corp., Cincinnati.
Keckley Co., O. C., Skokie, Ill.
Kieley & Mueller, Inc., Middletown, N. Y.
Klipfel Valves, Inc., Hamilton, O.
Ladish Co., Cudahy, Wis.
Leslie Co., Lyndhurst, N. J.
Mason-Neilan, Div. of Worthington Corp., Norwood, Mass.
McAlear Mfg. Co., Chicago, Ill.
Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.
Minneapolis-Honeywell Regulator Co., Industrial Div., Philadelphia, Pa.
Mueller Brass Co., Port Huron, Mich.
Mueller Co., Decatur, Ill.
North American Mfg. Co., Cleveland, O.
Norwood Controls, A Unit of Detroit Controls, Norwood, Mass.
P-K Industries, Inc., North Arlington, N. J.
Parks-Cramer Co., Fitchburg, Mass. (plain and jacketed)
Patrol Valve Co., The, Cleveland, O.
Paul Valve Corp., New York, N. Y.
Powers Regulator Co., Skokie, Ill.
R.K.L. Valve & Mfg. Co., Maple Shade, N. J.
Republic Flow Meters Co., Chicago, Ill.
Rockwell Co., W. S., Fairfield, Conn.
Ross Valve Mfg. Co., Inc., Troy, N. Y.
Ruggles-Klingemann Mfg. Co., Boston, Mass
Saran Lined Pipe Co., Ferndale, Mich.
Sarco Co., Inc., New York, N. Y.
Schade Valve Mfg. Co., Philadelphia, Pa.
Scientific Instrument Co., Detroit, Mich.
Sinclair-Collins Valve Co., Akron, O.
Skinner Electric Valve Div., The Skinner Chuck Co., New Britain, Conn.
Smith Co., S. Morgan, York, Pa.
Squires Co., C. E., The, Cleveland, O.
Sullivan Valve & Engineering Co., Butte, Mont.
Trerice Co., H. O., Detroit, Mich.
Uniflow Valve Corp., Cranford, N. J.
United States Rubber Co., New York, N. Y.
Valves, Inc., F. G., Milwaukee, Wis.
Warren Engineering Co., Broadway, N. J.
Watts Regulator Co., Lawrence, Mass.
Weston Instruments, Div. of Daystrom, Inc., Newark, N. J.
Whittaker Controls, A Div. of Telecomputing Corp., Los Angeles, Calif.

VALVES, DIAPHRAGM

(Diaphragm itself throttles or shuts off flow)

A-P Controls Div., Controls Co. of America, Milwaukee, Wis.
Alpha Plastics, Inc., Livingston, N. J. (PVC)
American Flow Control Corp., Houston, Tex.
American Hard Rubber Co., Div. of Amerace Corp., Butler, N. J.
Arco Products, Automotive Rubber Co., Detroit, Mich.
Associated Valve & Engineering Co., North Wales, Pa.
Automatic Switch Co., Florham Park, N. J.
Bailey Co., Chas. M., San Francisco, Calif.
Baso, Inc., Milwaukee, Wis.
Bristol Co., The, Waterbury, Conn.
Chatleff Valve & Mfg. Co., Austin, Tex.
Cla-Val Co., Newport Beach, Calif.
Conoflow Corp., Subsidiary of Walworth Corp., Philadelphia, Pa.
Coppus Engineering Corp., Worcester, Mass.
Dahl, G. W., Bristol, R. I.
Defender Instrument & Regulator Co., Boody, Ill.
Fischer & Porter Co., Hatboro, Pa.
Foster Engineering Co., Union, N. J.
Fulton Sylphon Div., Robertshaw-Fulton Controls Co., Knoxville, Tenn.
Gas & Oil Industry Laboratories, Inc., Irvington, N. J.
General Ceramics Corp., Keasbey, N. J. (chemical stoneware)
General Controls Co., Glendale, Calif.
Grinnell Co., Inc., Providence, R. I.
Grove Valve and Regulator Co., Oakland, Calif.
Henry Valve Co., Melrose Park, Ill.
Hills-McCanna Co., Chicago, Ill.
Hunt & Son, Inc., C. B., Salem, O.
Johnson Corp., The, Three Rivers, Mich.
Keckley Co., O. C., Skokie, Ill.
Kieley & Mueller, Inc., Middletown, N. Y.
Ladish Co., Cudahy, Wis.
Ladish Co., Tri-Clover Div., Kenosha, Wis.
Lead Lined Iron Pipe Co., Wakefield, Mass.
Mason-Neilan, Div. of Worthington Corp., Norwood, Mass.
Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.
Modern Engineering Co., St. Louis, Mo.
Norwalk Valve Div., Eclipse Fuel Engineering Co., Rockford, Ill.
Rockwell Co., W. S., Fairfield, Conn.
Sall Bros. Co., Rockford, Ill.
Saran Lined Pipe Co., Ferndale, Mich.
Schade Valve Mfg. Co., Philadelphia, Pa.
Scientific Instrument Co., Detroit, Mich.
Security Valves Corp., Glendale, Calif.
Sinclair-Collins Valve Co., Akron, O.
Sullivan Valve & Engrg. Co., Butte, Mont.
Trerice Co., H. O., Detroit, Mich.
Tube Turns Plastics, Inc., Louisville, Ky. (injection molded PVC)
Uniflow Valve Corp., Cranford, N. J.
United States Rubber Co., New York, N. Y.
Walworth Co., New York, N. Y. (plastic PVC diaphragm)
Warren Engineering Co., Broadway, N. J.
Watts Regulator Co., Lawrence, Mass.
White-Rodgers Co., St. Louis, Mo.

VALVES, DIAPHRAGM

(Diaphragm used as seal between body and bonnet)

Alpha Plastics, Inc., Livingston, N. J. (PVC)
American Hard Rubber Co., Div. of Amerace Corp., Butler, N. J.
Arco Products, Automotive Rubber Co., Detroit, Mich.
Associated Valve & Engineering Co., North Wales, Pa.
Automatic Switch Co., Florham Park, N. J.
Bailey Co., Chas. M., San Francisco, Calif.
Cla-Val Co., Newport Beach, Calif.
Conoflow Corp., Subsidiary of Walworth Corp., Philadelphia, Pa.
Crane Co., Chicago, Ill.
Dahl, G. W., Bristol, R. I.
Defender Instrument & Regulator Co., Boody, Ill.
Duriron Co., Inc., The, Dayton, O.
Eclipse Fuel Engineering Co., Rockford, Ill.
Fulton Sylphon Div., Robertshaw-Fulton Controls Co., Knoxville, Tenn.
General Controls Co., Glendale, Calif.
Goodrich Industrial Products Co., B. F., Akron, O. (rubber lined)
Grinnell Co., Inc., Providence, R. I.
Hammel-Dahl, Div. of General Controls Co., Warwick, R. I.
Haveg Industries, Inc., Wilmington, Del.
Henry Valve Co., Melrose Park, Ill.
Imperial Brass Mfg. Co., Chicago, Ill.
Jordan Corp., Div. of OPW Corp., Cincinnati.
Kerotest Mfg. Co., Pittsburgh, Pa.
Klipfel Valves, Inc., Hamilton, O.
Knight, Maurice A., Akron, O. (molded resin for acids)
Ladish Co., Cudahy, Wis.
Leslie Co., Lyndhurst, N. J.
Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.
Mueller Brass Co., Port Huron, Mich.
Norwalk Valve Div., Eclipse Fuel Engineering Co., Rockford, Ill.
Powell Co., Wm., The, Cincinnati, O.
Research Vacuum Supply Co., Chicago, Ill.
Rockwell Co., W. S., Fairfield, Conn.
Ruggles-Klingemann Mfg. Co., Boston, Mass.
Security Valves Corp., Glendale, Calif.
Superior Valve & Fittings Co., Pittsburgh, Pa.
Taylor Instrument Companies, Rochester, N. Y.
Trane Co., The, La Crosse, Wis.
Uniflow Valve Corp., Cranford, N. J.
United States Rubber Co., New York, N. Y.
Watts Regulator Co., Lawrence, Mass.
Weston Instruments, Div. of Daystrom, Inc., Newark, N. J.

VALVES, FIRE PROTECTION, SPRINKLER SYSTEM CONTROL

Allen Mfg. Co., W. D., Bellwood, Ill.
Automatic Switch Co., Florham Park, N. J.
Coppus Engineering Corp., Worcester, Mass.
Crane Co., Chicago, Ill.
Dahl, G. W., Bristol, R. I.
Davis Regulator Co., Chicago, Ill.
Everlasting Valve Co., Jersey City, N. J.
Fairbanks Co., The, New York, N. Y.
Greenwood Valve Div. of Vernon Tool Co., Ltd., Alhambra, Calif.
Grinnell Co., Inc., Providence, R. I.

Grove Valve and Regulator Co., Oakland, Calif.
Hersey Mfg. Co., Dedham, Mass.
Hodgman Mfg. Co., Inc., Taunton, Mass.
Homestead Valve Mfg. Co., Coraopolis, Pa.
Jenkins Bros., New York, N. Y.
Keckley Co., O. C., Skokie, Ill.
Kennedy Valve Mfg. Co., The, Elmira, N. Y.
M & H Valve & Fittings Co., Div. of Walworth Co., Anniston, Ala.
Mueller Co., Decatur, Ill.
Ohio Injector Co., Wadsworth, O.
Okadee Co., Chicago, Ill.
R-P & C Valve Div., American Chain & Cable Co., Inc., Reading, Pa.
Raisler Corp., Grimes Sprinkler Div., New York, N. Y.
Rockwood Sprinkler Co., Worcester, Mass.
Schutte & Koerting Co., Cornwells Heights, Bucks County, Pa.
Security Valves Corp., Glendale, Calif.
Stockham Valves & Fittings, Birmingham, Ala.
Valco, Inc., Cincinnati, O.
Zurn Industries, Inc., Erie, Pa.

VALVES, FLOAT

A-P Controls Div., Controls Co. of America, Milwaukee, Wis. (Oil)
Alco Valve Co., St. Louis, Mo.
American Hard Rubber Co., Div. of Amerace Corp., Butler, N. J. (Hard rubber)
American Moistening Co., Cleveland, N. C.
Associated Valve & Engineering Co., North Wales, Pa.
Atlas Valve Co., Newark, N. J.
Bailey Co., Chas. M., San Francisco, Calif.
Beckett & Co., Inc., Thomas, Dallas, Tex.
Boylston Steam Specialty Co., Chicago, Ill.
Cla-Val Co., Newport Beach, Calif.
Cleveland Humidifier Co., Cleveland, O.
Cochrane Corp., Philadelphia, Pa.
Davis Regulator Co., Chicago, Ill.
Defender Instrument and Regulator Co., Boody, Ill.
d'Este Div., Kaye & MacDonald, Inc., West Orange, N. J.
Detroit Controls Div. of American-Standard, Detroit, Mich.
Duriron Co., Inc., The, Dayton, O. (acid resisting)
Eddy Valve Co., Waterford, N. Y.
Fisher Governor Co., Marshalltown, Ia.
Foster Engineering Co., Union, N. J.
Frick Co., Waynesboro, Pa.
Fulton Sylphon Div., Robertshaw-Fulton Controls Co., Knoxville, Tenn.
Golden Anderson Valve Specialty Co., Pittsburgh, Pa.
Grove Valve and Regulator Co., Oakland, Calif.
Hubbell Corp., Mundelein, Ill.
Industrial Plastic Fabricators, Norwood, Mass. (PVC)
Keckley Co., O. C., Skokie, Ill.
Ken-Ray Brass Products, Inc., Vermont, Ill.
Kieley & Mueller, Inc., Middletown, N. Y.
Klipfel Valves, Inc., Hamilton, O.
Ladish Co., Tri-Clover Div., Kenosha, Wis.
Luzerne Rubber Co., Trenton, N. J. (Hard rubber)
Maid-O'-Mist, Inc., Chicago, Ill.
McAlear Mfg. Co., Chicago, Ill.
McDonald Mfg. Co., A. Y., Dubuque, Ia.
McDonnell & Miller, Inc., Chicago, Ill.
Minneapolis-Honeywell Regulator Co., Industrial Div., Philadelphia, Pa.
Morey, Dan, Los Angeles, Calif. (for evaporative coolers and cooling towers)
Multiplex Mfg. Co., Berwick, Pa.
OPW Corp., Cincinnati, O.
Phillips & Co., H. A., Chicago, Ill.
Robert Mfg. Co., Los Angeles, Calif.
Rockwell Co., W. S., Fairfield, Conn.
Ross Valve Mfg. Co., Inc., Troy, N. Y.
Ruggles-Klingemann Mfg. Co., Boston, Mass.
Shade Valve Mfg. Co., Philadelphia, Pa.
Schaub Engineering Co., Fred H., Chicago, Ill.
Schutte and Koerting Co., Cornwells Heights, Bucks County, Pa.
Scoville Mfg. Co., Waterbury, Conn.
Skuttle Mfg. Co., Milford, Mich.
Smith Co., S. Morgan, York, Pa.
Spence Engineering Co., Inc., Walden, N. Y.
Stickle Steam Specialties Co., Indianapolis, Ind.
Taco Heaters, Inc., Cranston, R. I.
TOT Towers, Inc., Houston, Tex.
Trerice Co., H. O., Detroit, Mich.
Tryco Products, Inc., Westfield, Mass.
Valves, Inc., F. G., Milwaukee, Wis.
Vanton Pump & Engineering Corp., Hillside, N. J. (plastic)
Velan Valve Corp., Plattsburgh, N. Y.
Wabash Corp., Chicago, Ill.
Warren Engineering Co., Broadway, N. J.
Watts Regulator Co., Lawrence, Mass.
Whittaker Controls, A Div. of Telecomputing Corp., Los Angeles, Calif.

VALVES, FLOAT AND LEVER BALANCED

Atlas Valve Co., Newark, N. J.
d'Este Div., Kaye & MacDonald, Inc., West Orange, N. J.
Foster Engineering Co., Union, N. J.
Fulton Sylphon Div., Robertshaw-Fulton Controls Co., Knoxville, Tenn.
Keckley Co., O. C., Skokie, Ill.
Kieley & Mueller, Inc., Middletown, N. Y.
McAlear Mfg. Co., Chicago, Ill.
Ross Valve Mfg. Co., Inc., Troy, N. Y.
Warren Engineering Co., Broadway, N. J.
Watts Regulator Co., Lawrence, Mass.

VALVES, FLOW CONTROL, FOR HOT WATER HEATING SYSTEMS

American Flow Control Corp., Houston, Tex.
Automatic Switch Co., Florham Park, N. J.
Barber-Colman Co., Rockford, Ill.
Beacon Brass Co., Waltham, Mass.
Bell & Gossett Co., Morton Grove, Ill.
Defender Instrument & Regulator Co., Boody, Ill.
Dunham-Bush, Inc., West Hartford, Conn.
Econo Products Company, Inc., Div. of Viking Instruments, Inc., East Haddam, Conn.
Fischer & Porter Co., Hatboro, Pa.
General Controls Co., Glendale, Calif., and Skokie, Ill.
Hammel-Dahl, Div. of General Controls Co., Warwick, R. I.
Hayes Mfg. Co., Erie, Pa.
Homestead Valve Mfg. Co., Coraopolis, Pa.
Illinois Engineering Products, American Air Filter Co., Inc., Louisville, Ky.
Jackes-Evans Mfg. Co., Controls Div., St. Louis, Mo.
Kates Co., W. A., Deerfield, Ill.
Kehm Corp., The, Chicago, Ill.
Kieley & Mueller, Inc., Middletown, N. Y.
Ladish Co., Cudahy, Wis.
Leslie Co., Lyndhurst, N. J.
Manning, Maxwell & Moore, Inc., Stratford, Conn.
Metalmaster Corp., Newark, N. J.
Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.
Minneapolis-Honeywell Regulator Co., Industrial Div., Philadelphia, Pa.
OPW Corp., Cincinnati, O.
Quality Specialty Co., Inc., Camden, N. J.
Rockwell Co., W. S., Fairfield, Conn.
Sall Bros. Co., Rockford, Ill.
Sarcotherm Controls, Inc., New York, N. Y.
Squires Co., C. E., The, Cleveland, O.
Taco Heaters, Inc., Cranston, R. I.
Thrush & Co., H. A., Peru, Ind.
Trane Co., The, La Crosse, Wis.
Trerice Co., H. O., Detroit, Mich.
Triplex Heating Specialty Co., Inc., Peru, Ind.
Velan Valve Corp., Plattsburgh, N. Y.
Webster & Co., Warren, Camden, N. J.
White Flomatic Corp., Hoosick Falls, N. Y.

VALVES, FLUSH, BOTTOM TANK

Cooper Alloy Corp., Hillside, N. J.
Ladish Co., Cudahy, Wis.
Luzerne Rubber Co., Trenton, N. J. (hard rubber)
Powell Co., Wm., The, Cincinnati, O.

VALVES, FORGED STEEL

Alco Products, Inc., Schenectady, N. Y.
American Meter Co., Inc., Philadelphia, Pa.
Atlas Valve Co., Newark, N. J.
Chapman Valve Mfg. Co., The, Indian Orchard, Springfield, Mass.
Conoflow Corp., Subsidiary of Walworth Co., Philadelphia, Pa.
Crane Co., Chicago, Ill.
Dahl, G. W., Bristol, R. I.
Edward Valves, Inc., East Chicago, Ind.
Farris Engineering Corp., Palisades Park, N. J.
Fulton Sylphon Div., Robertshaw-Fulton Controls Co., Knoxville, Tenn.
Grove Valve and Regulator Co., Oakland, Calif.
Henry Valve Co., Melrose Park, Ill.
Kerotest Mfg. Corp., Pittsburgh, Pa.
Kieley & Mueller, Inc., Middletown, N. Y.
Lenz Co., Dayton, O.
Lunkenheimer Co., Cincinnati, O.
Manning, Maxwell & Moore, Inc., Stratford, Conn.
Ohio Injector Co., Wadsworth, O.
P-K Industries, Inc., North Arlington, N. J.
Paul Valve Corp., New York, N. Y.
Penberthy Mfg. Co., Div. of Buffalo Eclipse Corp., Detroit, Mich.
Powell Co., Wm., The, Cincinnati, O.
R-P & C Valve Div., American Chain & Cable Co., Inc., Reading, Pa.
Republic Mfg. Co., Cleveland, O.
Schutte & Koerting Co., Cornwells Heights, Bucks County, Pa.
Smith Co., S. Morgan, York, Pa.
Stockham Valves & Fittings, Birmingham, Ala.
Superior Valve & Fittings Co., Pittsburgh.
Taylor Instrument Companies, Rochester, N. Y.
Velan Valve Corp., Plattsburgh, N. Y.
Vogt Machine Co., Henry, Louisville, Ky.
Worcester Valve Co., Inc., Worcester, Mass.
Yarnall-Waring Co., Philadelphia, Pa.

VALVES, FUEL OIL, METERING

Automatic Switch Co., Florham Park, N. J.
Hauck Mfg. Co., Brooklyn, N. Y.
Henry Valve Co., Melrose Park, Ill.
National Airoil Burner Co., Inc., Philadelphia, Pa.

VALVES, GATE, ALLOY

Alloy Steel Products Co., Linden, N. J. (Stainless steel)
Chapman Valve Mfg. Co., The, Indian Orchard, Springfield, Mass.
Cooper Alloy Corp., Hillside, N. J.
Crane Co., Chicago, Ill.
Darling Valve & Mfg. Co., Williamsport, Pa.
Detroit Controls Div., American-Standard, Stratford, Conn.
Dia-Plug Valve Corp., Buffalo, N. Y.
Edward Valves, Inc., East Chicago, Ind.
Fabri-Valve Co. of America, Portland, Ore.
Fischer & Porter Co., Hatboro, Pa.
Hamer Valves, Inc., Long Beach, Calif.
Jenkins Bros., New York, N. Y.
Kerotest Mfg. Corp., Pittsburgh, Pa.
Ludlow Valve Mfg. Co., Inc., Troy, N. Y.
Lunkenheimer Co., Cincinnati, O.
Milwaukee Valve Co., Milwaukee, Wis.
New England Valve Corp., Worcester, Mass.
Nuclear & Power Equipment Corp., S. San Francisco, Calif.
OPW Corp., Cincinnati, O.
Ohio Injector Co., Wadsworth, O.
Powell Co., Wm., The, Cincinnati, O.
Rockwell Co., W. S., Fairfield, Conn.
Semet-Solvay Engineering Div., Allied Chemical Corp., New York, N. Y.
Stockham Valves & Fittings, Birmingham, Ala.
Velan Valve Corp., Plattsburgh, N. Y.
Walworth Co., New York, N. Y.
Whittaker Controls, A Div. of Telecomputing Corp., Los Angeles, Calif.

VALVES, GATE, ALUMINUM

Allegheny Valve Co., Warren, Pa.
American Flow Control Corp., Houston, Tex.
Darling Valve & Mfg. Co., Williamsport, Pa.
Hamer Valves, Inc., Long Beach, Calif.
Jordan Corp., Div. of OPW Corp., Cincinnati, O.
Milwaukee Valve Co., Milwaukee, Wis.
OPW Corp., Cincinnati, O.
Powell Co., Wm., The, Cincinnati, O.
Rockwell Co., W. S., Fairfield, Conn.
Whittaker Controls, A Div. of Telecomputing Corp., Los Angeles, Calif.

VALVES, GATE, BRASS AND BRONZE

American Brass Co., Waterbury, Conn.
Chapman Valve Mfg. Co., The, Indian Orchard, Springfield, Mass.

Chase Brass & Copper Co., Waterbury, Conn.
Crane Co., Chicago, Ill.
Darling Valve Mfg. Co., Williamsport, Pa.
Detroit Controls Div. of American-Standard, Detroit, Mich.
Detroit Controls Div., American-Standard, Stratford, Conn.
Eclipse Fuel Engineering Co., Rockford, Ill.
Eddy Valve Co., Waterford, N. Y.
Everlasting Valve Co., Jersey City, N. J.
Fairbanks Co., The, New York, N. Y.
Fischer & Porter Co., Hatboro, Pa.
Hamer Valves, Inc., Long Beach, Calif.
Hammond Valve Corp., Hammond, Ind.
Jenkins Bros., New York, N. Y.
Jordan Corp., Div. of OPW Corp., Cincinnati, O.
Kennedy Valve Mfg. Co., Elmira, N. Y.
Lead Lined Iron Pipe Co., Wakefield, Mass. (Tin lined)
Ludlow Valve Mfg. Co., Inc., Troy, N. Y.
Lunkenheimer Co., Cincinnati, O.
Marsh Valve Co., Dunkirk, N. Y.
McDonald Mfg. Co., A. Y., Dubuque, Ia.
Milwaukee Valve Co., Milwaukee, Wis.
Morrison Brothers Co., Dubuque, Ia. (for oil handling)
Mueller Brass Co., Port Huron, Mich.
Nibco, Inc., Elkhart, Ind.
OPW Corp., Cincinnati, O.
Ohio Brass Co., Mansfield, O.
Ohio Injector Co., Wadsworth, O.
Pittsburgh Valve Co., Reedsville, W. Va.
Powell Co., Wm., The, Cincinnati, O.
Prier Brass Mfg. Co., Kansas City, Mo.
R-P & C Valve Div., American Chain & Cable Co., Inc., Reading, Pa.
Rockford Brass Works, Rockford, Ill.
Rockwell Co., W. S., Fairfield, Conn.
Schaible Co., The, Mariemont, O.
Scott Valve Mfg. Co., Detroit, Mich.
Stockham Valves & Fittings, Birmingham, Ala.
Walworth Co., New York, N. Y.

VALVES, GATE, IRON BODY

Chapman Valve Mfg. Co., The, Indian Orchard, Springfield, Mass.
Clow & Sons, Inc., James B., Chicago, Ill.
Crane Co., Chicago, Ill.
Darling Valve & Mfg. Co., Williamsport, Pa.
De Zurik Corp., Sartell, Minn.
Eclipse Fuel Engineering Co., Rockford, Ill.
Eddy Valve Co., Waterford, N. Y.
Everlasting Valve Co., Jersey City, N. J.
Fairbanks Co., The, New York, N. Y.
Fischer & Porter Co., Hatboro, Pa.
Gas Machinery Co., Cleveland, O.
Jenkins Bros., New York, N. Y.
Kennedy Valve Mfg. Co., Elmira, N. Y.
Lead Lined Iron Pipe Co., Wakefield, Mass. (Lead and tin lined)
Ludlow Valve Mfg. Co., Inc., Troy, N. Y.
Lunkenheimer Co., Cincinnati, O.
M & H Valve & Fittings Co., Div. of Walworth Co., Anniston, Ala.
McDonald Mfg. Co., A. Y., Dubuque, Ia.
Mueller Co., Decatur, Ill.
Ohio Injector Co., Wadsworth, O.
Okadee Co., Chicago, Ill.
Powell Co., Wm., The, Cincinnati, O.
R-P & C Valve Div., American Chain & Cable Co., Inc., Reading, Pa.
Rich Mfg. Co. of California, Los Angeles, Calif.
Rockwell Co., W. S., Fairfield, Conn.
Scott Valve Mfg. Co., Detroit, Mich.
Semet-Solvay Engineering Div., Allied Chemical Corp., New York, N. Y.
Stockham Valves & Fittings, Birmingham, Ala.
W-K-M, Div. of ACF Industries, Inc., Houston, Tex.
Walworth Co., New York, N. Y.
Whittaker Controls, A Div. of Telecomputing Corp., Los Angeles, Calif.

VALVES, GATE, MALLEABLE IRON

Crane Co., Chicago, Ill.
Powell Co., Wm., The, Cincinnati, O.
Rockwell Co., W. S., Fairfield, Conn.

VALVES, GATE, STEEL

Alco Products, Inc., Schenectady, N. Y.
Allegheny Valve Co., Warren, Pa.
Allmetal Screw Products Co., Inc., Garden City, Long Island, N. Y.
Cameron Iron Works, Inc., Houston, Tex.
Chapman Valve Mfg. Co., The, Indian Orchard, Springfield, Mass.
Crane Co., Chicago, Ill.
Darling Valve & Mfg. Co., Williamsport, Pa.
De Zurik Corp., Sartell, Minn.
Edward Valves, Inc., East Chicago, Ind.
Everlasting Valve Co., Jersey City, N. J.
Fabri-Valve Co. of America, Portland, Ore.
Fischer & Porter Co., Hatboro, Pa.
Greenwood Valve Div. of Vernon Tool Co., Ltd., Alhambra, Calif.
Grove Valve and Regulator Co., Oakland, Calif.
Hamer Valves, Inc., Long Beach, Calif.
Jenkins Bros., New York, N. Y.
Kerotest Mfg. Co., Pittsburgh, Pa.
L. R. P. Corp., Liecester, N. Y.
Lead Lined Iron Pipe Co., Wakefield, Mass. (lead lined)
Ludlow Valve Mfg. Co., Inc., Troy, N. Y.
Lunkenheimer Co., Cincinnati, O.
Manning, Maxwell & Moore, Inc., Stratford, Conn.
Nuclear & Power Equipment Corp., S. San Francisco, Calif.
Ohio Injector Co., Wadsworth, O.
Okadee Co., Chicago, Ill.
Powell Co., Wm., The, Cincinnati, O.
R-P & C Valve Div., American Chain & Cable Co., Inc., Reading, Pa.
Rockwell Co., W. S., Fairfield, Conn.
Semet-Solvay Engineering Div., Allied Chemical Corp., New York, N. Y.
Stockham Valves & Fittings, Birmingham, Ala.
Velan Valve Corp., Plattsburgh, N. Y.
Vogt Machine Co., Henry, Louisville, Ky.
W-K-M, Div. of ACF Industries, Inc., Houston, Tex.
Walworth Co., New York, N. Y.
Worcester Valve Co., Inc., Worcester, Mass.

VALVES, GLOBE, ALLOY

Alloy Steel Products Co., Linden, N. J. (Stainless steel)
Associated Valve & Engineering Co., North Wales, Pa.
Cooper Alloy Corp., Hillside, N. J.
Crane Co., Chicago, Ill.
Dahl, G. W., Bristol, R. I.
Detroit Controls Div., American-Standard, Stratford, Conn.
Edward Valves, Inc., East Chicago, Ind.
Fulton Sylphon Div., Robertshaw-Fulton Controls Co., Knoxville,, Tenn.
Greer Hydraulics, Inc., Jamaica, N. Y.
Hammel-Dahl, Div. of General Controls Co., Warwick, R. I.
Jenkins Bros., New York, N. Y.
Kerotest Mfg. Co., Pittsburgh, Pa.
Lunkenheimer Co., Cincinnati, O.
Manning, Maxwell & Moore, Inc., Stratford, Conn.
Milwaukee Valve Co., Milwaukee, Wis.
Nuclear & Power Equipment Corp., S. San Francisco, Calif.
Ohio Injector Co., Wadsworth, O.
Powell Co., Wm., The, Cincinnati, O.
Republic Mfg. Co., Cleveland, O.
Schutte & Koerting Co., Cornwells Heights, Bucks County, Pa.
Stockham Valves & Fittings, Birmingham, Ala.
Strahman Valves, Inc., New York, N. Y.
Velan Valve Corp., Plattsburgh, N. Y.
Walworth Co., New York, N. Y.
Worcester Valve Co., Inc., Worcester, Mass.

VALVES, GLOBE, ALUMINUM

Dahl, G. W., Bristol, R. I.
Powell Co., Wm., The, Cincinnati, O.
Republic Mfg. Co., Cleveland, O.

VALVES, GLOBE, BRASS AND BRONZE

American Brass Co., Waterbury, Conn.
Atkomatic Valve Co., Inc., Indianapolis, Ind.
Automatic Timing & Controls, Inc., King of Prussia, Pa.
California Brass Mfg. Co., Los Angeles.
Carpenter Sales Corp., Cleveland, O.
Chapman Valve Mfg. Co., The, Indian Orchard, Springfield, Mass.
Chase Brass & Copper Co., Waterbury, Conn.
Cla-Val Co., Newport Beach, Calif.
Cleveland Brass Mfg. Co., The, Kinsman, O.
Crane Co., Chicago, Ill.
Dahl, G. W., Bristol, R. I.
Defender Instrument & Regulator Co., Boody, Ill.
Detroit Controls Div. of American-Standard, Detroit, Mich.
Detroit Controls Div., American-Standard, Stratford, Conn.
Fairbanks Co., The, New York, N. Y.
Fulton Sylphon Div., Robertshaw-Fulton Controls Co., Knoxville, Tenn.
Greer Hydraulics, Inc., Jamaica, N. Y.
Grinnell Co., Inc., Providence, R. I.
Hammel-Dahl, Div. of General Controls Co., Warwick, R. I.
Hammond Valve Corp., Hammond, Ind.
Henry Valve Co., Melrose Park, Ill.
Hoffman Specialty Mfg. Corp., Indianapolis, Ind.
Jenkins Bros., New York, N. Y.
Kennedy Valve Mfg. Co., Elmira, N. Y.
Kerotest Mfg. Co., Pittsburgh, Pa.
Lunkenheimer Co., Cincinnati, O.
Manning, Maxwell & Moore, Inc., Stratford, Conn.
Marsh Heating Equipment Co., Skokie, Ill.
Marsh Valve Co., Dunkirk, N. Y.
McDonald Mfg. Co., A. Y., Dubuque, Ia.
Milwaukee Valve Co., Milwaukee, Wis.
Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.
Minneapolis-Honeywell Regulator Co., Industrial Div., Philadelphia, Pa.
Morse-Smith-Morse, Inc., Watertown, Mass.
Mueller Brass Co., Port Huron, Mich.
Mueller Co., Decatur, Ill.
Nibco, Inc., Elkhart, Ind.
Ohio Brass Co., Mansfield, O.
Ohio Injector Co., Wadsworth, O.
Pittsburgh Valve Co., Reedsville, W. Va.
Powell Co., Wm., The, Cincinnati, O.
R-P & C Valve Div., American Chain & Cable Co., Inc., Reading, Pa.
Republic Mfg. Co., Cleveland, O.
Rockford Brass Works, Rockford, Ill.
Sarcotherm Controls, Inc., New York, N. Y.
Schaible Co., The, Mariemont, O.
Schutte & Koerting Co., Cornwells Heights, Bucks County, Pa.
Scott Valve Mfg. Co., Detroit, Mich.
Stockham Valves & Fittings, Birmingham, Ala.
Strahman Valves, Inc., New York, N. Y.
Superior Valve & Fittings Co., Pittsburgh.
Taylor Instrument Companies, Rochester, N. Y.
Walworth Co., New York, N. Y.
White Flomatic Corp., Hoosick Falls, N. Y.

VALVES, GLOBE, IRON BODY

Automatic Timing & Controls, Inc., King of Prussia, Pa.
Cla-Val Co., Newport Beach, Calif.
Crane Co., Chicago, Ill.
Dahl, G. W., Bristol, R. I.
Dersch, Gesswein & Neuert, Inc., Chicago.
Fairbanks Co., The, New York, N. Y.
Frick Co., Waynesboro, Pa.
Fulton Sylphon Div., Robertshaw-Fulton Controls Co., Knoxville, Tenn.
Hammel-Dahl, Div. of General Controls Co., Warwick, R. I.
Henry Valve Co., Melrose Park, Ill.
Jenkins Bros., New York, N. Y.
Kennedy Valve Mfg. Co., Elmira, N. Y.
Lunkenheimer Co., Cincinnati, O.
Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.
Minneapolis-Honeywell Regulator Co., Industrial Div., Philadelphia, Pa.
Ohio Injector Co., Wadsworth, O.
Powell Co., Wm., The, Cincinnati, O.
R-P & C Valve Div., American Chain & Cable Co., Inc., Reading, Pa.
Scott Valve Mfg. Co., Detroit, Mich.
Shank Co., Cyrus, Chicago, Ill.
Stockham Valves & Fittings, Birmingham, Ala.
Strahman Valves, Inc., New York, N. Y.
Taylor Instrument Companies, Rochester, N. Y.
Walworth Co., New York, N. Y.

VALVES, GLOBE, MALLEABLE IRON

Crane Co., Chicago, Ill.
Dahl, G. W., Bristol, R. I.
Powell Co., Wm., The, Cincinnati, O.

VALVES, GLOBE, STEEL

Allmetal Screw Products Co., Inc., Garden City, Long Island, N. Y.
Automatic Timing & Controls, Inc., King of Prussia, Pa.
Chapman Valve Mfg. Co., The, Indian Orchard, Springfield, Mass.
Crane Co., Chicago, Ill.
Dahl, G. W., Bristol, R. I.
Edward Valves, Inc., East Chicago, Ind.
Fabri-Valve Co. of America, Portland, Ore.
Fulton Sylphon Div., Robertshaw-Fulton Controls Co., Knoxville, Tenn.
Grove Valve and Regulator Co., Oakland, Calif.
Hammel-Dahl, Div. of General Controls Co., Warwick, R. I.
Henry Valve Co., Melrose Park, Ill.
Jenkins Bros., New York, N. Y.
Kerotest Mfg. Co., Pittsburgh, Pa.
Lunkenheimer Co., Cincinnati, O.
Manning, Maxwell & Moore, Inc., Stratford, Conn.
Nuclear & Power Equipment Corp., S. San Francisco, Calif.
Ohio Injector Co., Wadsworth, O.
Powell Co., Wm., The, Cincinnati, O.
R-P & C Valve Div., American Chain & Cable Co., Inc., Reading, Pa.
Republic Mfg. Co., Cleveland, O.
Schutte and Koerting Co., Cornwells Heights, Bucks County, Pa.
Shank Co., Cyrus, Chicago, Ill.
Stockham Valves & Fittings, Birmingham, Ala.
Strahman Valves, Inc., New York, N. Y.
Taylor Instrument Companies, Rochester, N. Y.
Velan Valve Corp., Plattsburgh, N. Y.
Vogt Machine Co., Henry, Louisville, Ky.
Walworth Co., New York, N. Y.
Worcester Valve Co., Inc., Worcester, Mass.

VALVES, INSTRUMENT

Airaterra (Roylyn Products), Glendale, Calif.
Associated Valve & Engineering Co., North Wales, Pa.
Atkomatic Valve Co., Inc., Indianapolis, Ind.
Autoclave Engineers Sales Corp., Erie, Pa.
Automatic Switch Co., Florham Park, N. J.
Bailey Co., Charles M., San Francisco, Calif.
Bristol Co., The, Waterbury, Conn.
Circle Seal Products Co., Inc., Pasadena, Calif.
Crane Co., Chicago, Ill.
Dahl, G. W., Bristol, R. I.
Defender Instrument & Regulator Co., Boody, Ill.
Edward Valves, Inc., East Chicago, Ind.
Fischer & Porter Co., Hatboro, Pa.
Fisher Governor Co., Marshalltown, Ia.
Foster Engineering Co., Union, N. J.
Foxboro Co., Foxboro, Mass.
Fulton Sylphon Div., Robertshaw-Fulton Controls Co., Knoxville, Tenn.
Greer Hydraulics, Inc., Jamaica, N. Y.
Henry Valve Co., Melrose Park, Ill.
Imperial Brass Mfg. Co., Chicago, Ill.
Keckley Co., O. C., Skokie, Ill.
Leslie Co., Lyndhurst, N. J.
Lunkenheimer Co., Cincinnati, O.
Manning, Maxwell & Moore, Inc., Stratford, Conn.
Minneapolis-Honeywell Regulator Co., Industrial Div., Philadelphia, Pa.
Ohio Injector Co., Wadsworth, O.
P-K Industries, Inc., North Arlington, N. J.
Penberthy Mfg. Co., Div. of Buffalo Eclipse Corp., Detroit, Mich.
Petrometer Corp., Long Island City, N. Y.
Powell Co., Wm., The, Cincinnati, O.
Republic Mfg. Co., Cleveland, O.
Security Valves Corp., Glendale, Calif.
Skinner Electric Valve Div., The Skinner Chuck Co., New Britain, Conn.
Superior Valve & Fittings Co., Pittsburgh, Pa.
Trerice Co., H. O., Detroit, Mich.
Velan Valve Corp., Plattsburgh, N. Y.
Warren Engineering Co., Broadway, N. J.
Watts Regulator Co., Lawrence, Mass.
Worcester Valve Co., Inc., Worcester, Mass.

VALVES, LINED

American Flow Control Corp., Houston, Tex.
American Hard Rubber Co., Div. of Amerace Corp., Butler, N. J. (Rubber lined)
Cla-Val Co., Newport Beach, Calif.
Crane Co., Chicago, Ill.
Darling Valve & Mfg. Co., Williamsport, Pa.
De Zurik Corp., Sartell, Minn.
Division Lead Co., Summit, Ill.
Fabri-Valve Co. of America, Portland, Ore.
Farris Flexible Valve Corp., Palisades Park, N. J.
Gates Engineering Co., Wilmington, Del.
General Controls Co., Glendale, Calif., and Skokie, Ill.
Goodrich Industrial Products Co., B. F., Akron, O.
Grinnell Co., Inc., Providence, R. I.
Hills-McCanna Co., Chicago, Ill.
Homestead Valve Mfg. Co., Coraopolis, Pa.
Knapp Mills, Inc., Long Island City, N. Y.
LaFavorite Rubber Mfg. Co., Hawthorne, N. J.
Lead Lined Iron Pipe Co., Wakefield, Mass. (Lead lined)
National Lead Co., New York, N. Y. (Lead)
Nuclear & Power Equipment Corp., S. San Francisco, Calif.
P-K Industries, Inc., North Arlington, N. J.
Penberthy Mfg. Co., Div. of Buffalo Eclipse Corp., Detroit, Mich.
Powell Co., Wm., The, Cincinnati, O. (plastic)
R.K.L. Valve & Mfg. Co., Maple Shade, N. J.
Raybestos-Manhattan, Inc., Passaic, N. J. (Rubber)
Resisto Pipe & Valve Co., East Cambridge, Mass. (Lead)
Rockwell Co., W. S., Fairfield, Conn.
Rockwell Mfg. Co., Meter and Valve Div., Pittsburgh, Pa.
Saran Lined Pipe Co., Ferndale, Mich. (Saran lined)
Smith Co., S. Morgan, York, Pa.
United States Rubber Co., New York, N. Y. (rubber lined, metal)

VALVES, LUBRICATED PLUG

Duriron Co., Inc., The, Dayton, O. (acid resisting)
Homestead Valve Mfg. Co., Coraopolis, Pa.
Imperial Brass Mfg. Co., Chicago, Ill.
Ohio Injector Co., Wadsworth, O.
Mueller Co., Decatur, Ill.
Powell Co., William, Cincinnati, O.
Republic Mfg. Co., Cleveland, O.
Rockwell Mfg. Co., Meter & Valve Div., Pittsburgh, Pa.
W-K-M, Div. of ACF Industries, Inc., Houston, Tex.
Walworth Co., New York, N. Y.

VALVES, MIXING, HOT AND COLD WATER

Atkomatic Valve Co., Inc., Indianapolis, Ind.
Automatic Switch Co., Florham Park, N. J.
Bailey Co., Chas. M., San Francisco, Calif.
Barber-Colman Co., Rockford, Ill.
Beacon Brass Co., Waltham, Mass.
Bell & Gossett Co., Morton Grove, Ill.
Controls Co. of America, Soreng Div., Schiller Park, Ill.
Crane Co., Chicago, Ill.
Dahl, G. W., Bristol, R. I.
Dole Valve Co., The, Morton Grove, Ill.
Foxboro Co., Foxboro, Mass.
Fulton Sylphon Div., Robertshaw-Fulton Controls Co., Knoxville, Tenn.
General Controls Co., Glendale, Calif.
General Fittings Co., East Greenwich, R. I.
Hammel-Dahl, Div. of General Controls Co., Warwick, R. I.
Holby Tempering Valve Co., Inc., New York, N. Y.
Johnson Service Co., Milwaukee, Wis.
Klipfel Valves, Inc., Hamilton, O.
Marsh Valve Co., Dunkirk, N. Y.
McDonald Mfg. Co., A. Y., Dubuque, Ia.
Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.
Minneapolis-Honeywell Regulator Co., Industrial Div., Philadelphia, Pa.
OPW Corp., Cincinnati, O.
Powers Regulator Co., Skokie, Ill.
Sarco Co., Inc., New York, N. Y.
Sarcotherm Controls, Inc., New York, N. Y.
Schutte & Koerting Co., Buck County, Pa.
Strahman Valves, Inc., New York, N. Y.
Taco Heaters, Inc., Cranston, R. I.
Taylor Instrument Companies, Rochester, N. Y.
Trerice Co., H. O., Detroit, Mich.
Vapor Heating Corp., Chicago, Ill.
Watts Regulator Co., Lawrence, Mass.
Webster & Co., Warren, Camden, N. J.
Wilson Engineering Corp., Chicago, Ill. (for controlling water temperature leaving process equipment)
Yula Corp., Bronx, N. Y.

VALVES, MIXING, HOT AND COLD WATER, THERMOSTATIC

Beacon Brass Co., Waltham, Mass.
Controls Co. of America, Soreng Div., Schiller Park, Ill.
Dole Valve Co., Morton Grove, Ill.
Fulton Sylphon Div., Robertshaw-Fulton Controls Co., Knoxville, Tenn.
General Fittings Co., East Greenwich, R. I.
Holby Tempering Valve Co., Inc., New York, N. Y.
Jordan Corp., Div. of OPW Corp., Cincinnati, O.
Klipfel Valves, Inc., Hamilton, O.
Lawler Automatic Controls, Inc., Mt. Vernon, N. Y.
Leonard Valve Co., Cranston, R. I.
Patrol Valve Co., The, Cleveland, O.
Powers Regulating Co., Skokie, Ill.
Sarco Co., Inc., New York, N. Y.
Sarcotherm Controls, Inc., New York, N. Y.
Schutte & Koerting Co., Buck County, Pa.
Symmons Mfg. Co., Boston, Mass.
Taco Heaters, Inc., Cranston, R. I.
Trerice Co., H. O., Detroit, Mich.
Vic Mfg. Co., Minneapolis, Minn.
Warren Engineering Co., Broadway, N. J.
Watts Regulator Co., Lawrence, Mass.
White-Rodgers Co., St. Louis, Mo.
Yula Corp., Bronx, N. Y.

VALVES, MIXING, STEAM AND WATER

Hammel-Dahl, Div. of General Controls Co., Warwick, R. I.
Johnson Service Co., Milwaukee, Wis.
Klipfel Valves, Inc., Hamilton, O.
Leonard Valve Co., Cranston, R. I.
Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.
Minneapolis-Honeywell Regulator Co., Industrial Div., Philadelphia, Pa.
OPW Corp., Cincinnati, O.
O'Brien Steam Specialty Co., Inc., Syracuse, N. Y.
Powers Regulator Co., Skokie, Ill.
Sarco Co., Inc., New York, N. Y.
Sarcotherm Controls Inc., New York, N. Y.
Schutte and Koerting Co., Cornwells Heights, Bucks County, Pa.
Screw Machine Products Co., Portland, Ore.
Strahman Valves, Inc., New York, N. Y.
Taylor Instrument Companies, Rochester, N. Y.
Trerice Co., H. O., Detroit, Mich.
Vapor Heating Corp., Chicago, Ill.

VALVES, MOTOR OPERATED

Alloy Steel Products Co., Linden, N. J. (stainless steel)
Associated Valve & Engineering Co., North Wales, Pa.
Au-Temp-Co Corp., New York, N. Y.
Automatic Timing & Controls, Inc., King of Prussia, Pa.
Bailey Co., Chas. M., San Francisco, Calif.
Barber-Colman Co., Rockford, Ill.
Baso, Inc., Milwaukee, Wis.
Belco Industrial Equipment Div., Bogue Electrical Mfg. Co., Paterson, N. J.
Bell & Gossett Co., Morton Grove, Ill.
Black, Sivalls & Bryson, Inc., Kansas City, Mo.
Bristol Co., The, Waterbury, Conn.
Chapman Valve Mfg. Co., The, Indian Orchard, Springfield, Mass.
Clow & Sons, Inc., James B., Chicago, Ill.
Cochrane Corp., Philadelphia, Pa.
Conoflow Corp., Subsidiary of Walworth Co., Philadelphia, Pa.
Continental Equipment Co., Div. of Fisher Governor Co., Coraopolis, Pa.
Copes-Vulcan Div., Blaw-Knox Co., Erie, Pa.
Crane Co., Chicago, Ill.
Cutler-Hammer, Inc., Milwaukee, Wis.
Dahl, G. W., Bristol, R. I. (air motor)
Darling Valve & Mfg. Co., Williamsport, Pa.
Davis Regulator Co., Chicago, Ill.
Defender Instrument & Regulator Co., Boody, Ill.

De Zurik Corp., Sartell, Minn.
Duriron Co., Inc., The, Dayton, O. (acid resisting)
Eclipse Fuel Engineering Co., Rockford, Ill.
Econo Products Co., Inc., Div. of Viking Instruments, Inc., East Haddam, Conn.
Edward Valves, Inc., East Chicago, Ind.
Edwards Engineering Corp., Pompton Plains, N. J.
Fabri-Valve Co. of America, Portland, Ore.
Fischer & Porter Co., Hatboro, Pa.
Foster Engineering Co., Union, N. J.
Foxboro Co., Foxboro, Mass.
General Controls Co., Glendale, Calif., and Skokie, Ill.
Hammel-Dahl, Div. of General Controls Co., Warwick, R. I.
Hauck Mfg. Co., Brooklyn, N. Y.
Heat-Timer Corp., New York, N. Y.
Hills-McCanna Co., Chicago, Ill.
Hoffman Specialty Mfg. Corp., Indianapolis, Ind.
Homestead Valve Mfg. Co., Corsopolis, Pa.
Illinois Engineering Products, American Air Filter Co., Inc. Louisville, Ky.
Jenkins Bros., New York, N. Y.
Johnson Service Co., Milwaukee, Wis.
Keckley Co., O. C., Skokie, Ill.
Kennedy Valve Mfg. Co., Elmira, N. Y.
Kerotest Mfg. Co., Pittsburgh, Pa.
Kieley & Mueller, Inc., Middletown, N. Y.
Ludlow Valve Mfg. Co., Inc., Troy, N. Y.
Lunkenheimer Co., Cincinnati, O.
M & H Valve & Fittings Co., Div. of Walworth Co., Anniston, Ala.
Mason-Neilan, Div. of Worthington Corp., Norwood, Mass.
Mercoid Corp., Chicago, Ill.
Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.
Minneapolis-Honeywell Regulator Co., Industrial Div., Philadelphia, Pa.
National Controls, Inc., Newton, Mass.
North American Mfg. Co., Cleveland, O.
Nuclear & Power Equipment Corp., S. San Francisco, Calif.
Ohio Injector Co., Wadsworth, O.
Okadee Co., Chicago, Ill.
P-K Industries, Inc., North Arlington, N. J.
Paul Valve Corp., New York, N. Y.
Philadelphia Gear Corp., Philadelphia, Pa.
Powell Co., Wm., The, Cincinnati, O.
Pratt Co., Henry, Chicago, Ill.
Quality Specialty Corp., Inc., Camden, N. J.
R-P & C Valve Div., American Chain & Cable Co., Inc., Reading, Pa.
Refrigerating Specialties Co., Chicago, Ill.
Regent Engineering Co., Wood Dale, Ill.
Rockwell Co., W. S., Fairfield, Conn.
Rockwell Mfg. Co., Meter and Valve Div., Pittsburgh, Pa.
Ruggles-Klingemann Mfg. Co., Boston, Mass.
Saran Lined Pipe Co., Ferndale, Mich.
Sarco Co., Inc., New York, N. Y.
Sarcotherm Controls, Inc., New York, N. Y.
Schade Valve Mfg. Co., Philadelphia, Pa.
Schutte and Koerting Co., Buck County, Pa.
Scientific Instrument Co., Detroit, Mich.
Smith Co., S. Morgan, York, Pa.
Squires Co., C. E., The, Cleveland, O.
Stockham Valves & Fittings, Birmingham, Ala.
Taylor Instrument Companies, Rochester, N. Y.
Techniflex Corp., Port Jervis, N. Y.
Trerice Co., H. O., Detroit, Mich.
Velan Valve Corp., Plattsburgh, N. Y.
Vogt Machine Co., Henry, Louisville, Ky.
Walworth Co., New York, N. Y.
Warren Engineering Co., Broadway, N. J.
Webster & Co., Warren, Camden, N. J.
Wedgeplug Valve Co., Div. of Stockham Valves & Fittings, Birmingham, Ala.
Whittaker Controls, A Div. of Telecomputing Corp., Los Angeles, Calif.

VALVES, NEEDLE

A-P Controls Div., Controls Co. of America, Milwaukee, Wis.
Allin Mfg. Co., Inc., Chicago, Ill.
Alloy Steel Products Co., Linden, N. J. (Stainless steel)
American Meter Co., Inc., Philadelphia, Pa.
Anderson Brass Co., Detroit, Mich.
Anderson Metals Corp., Kansas City, Mo.
Associated Valve & Engineering Co., North Wales, Pa.
Autoclave Engineers Sales Corp., Erie, Pa.
Binks Mfg. Co., Chicago, Ill.
Carpenter Sales Corp., Cleveland, O.
Commonwealth Brass Corp., Detroit, Mich.
Cooper Alloy Corp., Hillside, N. J.
Couplings Co., Chicago, Ill.
Crane Co., Chicago, Ill.
Dahl, G. W., Bristol, R. I.
Detroit Controls Div. of American-Standard, Detroit, Mich.
Detroit Controls Div., American-Standard, Stratford, Conn.
Edward Valves, Inc., East Chicago, Ind.
Fairbanks Co., The, New York, N. Y.
Fulton Sylphon Div., Robertshaw-Fulton Controls Co., Knoxville, Tenn.
General-American Valve Co., Corona Del Mar, Calif.
Greer Hydraulics, Inc., Jamaica, N. Y.
Grove Valve and Regulator Co., Oakland, Calif.
Hammel-Dahl, Div. of General Controls Co., Warwick, Pa.
Hammond Valve Corp., Hammond, Ind.
Henry Valve Co., Melrose Park, Ill.
Imperial Brass Mfg. Co., Chicago, Ill.
Industrial Plastic Fabricators, Norwood, Mass. (PVC)
Jenkins Bros., New York, N. Y.
Kerotest Mfg. Co., Pittsburgh, Pa.
Kieley & Mueller, Inc., Middletown, N. Y.
Lunkenheimer Co., Cincinnati, O.
Maid-O'-Mist, Inc., Chicago, Ill.
Madden Brass Products Co., Aurora, Ill.
Manning, Maxwell & Moore, Inc., Stratford, Conn.
Marsh Instrument Co., Skokie, Ill.
Milwaukee Valve Co., Milwaukee, Wis.
Modern Engineering Co., St. Louis, Mo.
Morrison Brothers Co., Dubuque, Ia. (for oil handling)
Mueller Brass Co., Port Huron, Mich.
Norgren Co., C. A., Englewood, Colo.
Ohio Brass Co., Mansfield, O.
Ohio Injector Co., Wadsworth, O.
Penberthy Mfg. Co., Div. of Buffalo Eclipse Corp., Detroit, Mich.
Powell Co., Wm., The, Cincinnati, O.
R-P & C Valve Div., American Chain & Cable Co., Inc., Reading, Pa.
Reliable Products Mfg. Co., Inc., Brooklyn, N. Y.
Republic Mfg. Co., Cleveland, O.
Research Vacuum Supply Co., Chicago, Ill.
Security Valves Corp., Glendale, Calif.
Shank Co., Cyrus, Chicago, Ill.
Spindler & Sons, Inc., August, Jersey City, N. J.
Stockham Valves & Fittings, Birmingham, Ala.
Superior Valve & Fittings Co., Pittsburgh, Pa.
Taylor Instrument Companies, Rochester, N. Y.
Torit Mfg. Co., St. Paul, Minn.
Uehling Instrument Co., Paterson, N. J.
Vacuum-Electronic Engineering Co., New Hyde Park, L. I., N. Y.
Velan Valve Corp., Plattsburgh, N. Y.
Walworth Co., New York, N. Y.
Watkins Co., J. E., Maywood, Ill.
Weatherhead Co., The, Ft. Wayne Div., Ft. Wayne, Ind.
Worcester Valve Co., Inc., Worcester, Mass.

VALVES, NON-RETURN

Autoclave Engineers Sales Co., Erie, Pa.
Crane Co., Chicago, Ill.
Foster Engineering Co., Union, N. J.
Golden Anderson Valve Specialty Co., Pittsburgh, Pa.
Illinois Engineering Products, American Air Filter Co., Inc., Louisville, Ky.
Lunkenheimer Co., Cincinnati, O.
Ohio Injector Co., Wadsworth, O.
Powell Co., Wm., The, Cincinnati, O.
Republic Mfg. Co., Cleveland, O.
Velan Valve Corp., Plattsburgh, N. Y.

VALVES, OXYGEN

Airaterra (Roylyn Products), Glendale, Calif.
Atkomatic Valve Co., Inc., Indianapolis, Ind.
Cooper Alloy Corp., Hillside, N. J.
Dahl, G. W., Bristol, R. I.
Fairbanks Co., The, New York, N. Y.
Farris Engineering Corp., Palisades Park, N. J.
Greer Hydraulics, Inc., Jamaica, N. Y.
Grinnell Co., Inc., Providence, R. I.
Hamer Valves, Inc., Long Beach, Calif.
Hammel-Dahl, Div. of General Controls Co., Warwick, R. I.
Homestead Valve Mfg. Co., Coraopolis, Pa.
Hunt & Son, Inc., C. B., Salem, O.
Jamesbury Corp., Worcester, Mass.
Jenkins Bros., New York, N. Y.
Kennedy Valve Mfg. Co., The, Elmira, N. Y.
Kerotest Mfg. Co., Pittsburgh, Pa.
Linde Co., Div. of Union Carbide Corp., New York, N. Y.
Lunkenheimer Co., Cincinnati, O.
Modern Engineering Co., St. Louis, Mo.
Ohio Injector Co., Wadsworth, O.
Okadee Co., Chicago, Ill.
Oxygen Equipment & Service Co., Chicago, Ill.
Powell Co., Wm., The, Cincinnati, O.
Research Vacuum Supply Co., Chicago, Ill.
Schutte & Koerting Co., Buck County, Pa.
Stockham Valves & Fittings, Birmingham, Ala.
Superior Valve and Fittings Co., Pittsburgh, Pa.
Valco, Inc., Cincinnati, O.
Walworth Co., New York, N. Y.
Wedgeplug Valve Co., Div. of Stockham Valves & Fittings, Birmingham, Ala.
Worcester Valve Co., Inc., Worcester, Mass.

VALVES, PACKLESS

Associated Valve & Engineering Co., North Wales, Pa.
Atkomatic Valve Co., Inc., Indianapolis, Ind.
Automatic Switch Co., Florham Park, N. J.
Crane Co., Chicago, Ill.
Dahl, G. W., Bristol, R. I.
Fulton Sylphon Div., Robertshaw-Fulton Controls Co., Knoxville, Tenn.
Grinnell Co., Inc., Providence, R. I.
Hammel-Dahl, Div. of General Controls Co., Warwick, R. I.
Hanna Engineering Wks., Chicago, Ill.
Henry Valve Co., Melrose Park, Ill.
Hoffman Specialty Mfg. Corp., Indianapolis, Ind.
Illinois Engineering Products, American Air Filter Co., Inc., Louisville, Ky.
Jordan Corp., Div. of OPW Corp., Cincinnati, O.
Kerotest Mfg. Co., Pittsburgh, Pa.
Kinney Mfg. Div., The New York Air Brake Co., Boston, Mass. (vacuum)
Mercoid Corp., The, Chicago, Ill.
Powell Co., Wm., The, Cincinnati, O.
Powers Regulator Co., Skokie, Ill.
Spence Engineering Co., Inc., Walden, N. Y.
Superior Valve & Fittings Co., Pittsburgh, Pa.

VALVES, PILOT OPERATED

American Flow Control Corp., Houston, Tex.
Atkomatic Valve Co., Inc., Indianapolis, Ind.
Atlas Valve Co., Newark, N. J.
Automatic Switch Co., Florham Park, N. J.
Bailey Co., Charles M., San Francisco, Calif.
Black, Sivalls & Bryson, Inc., Kansas City, Mo.
Clark Mfg. Co., Cleveland, O.
Cla-Val Co., Newport Beach, Calif.
DeZurik Corp., Sartell, Minn.
Farris Flexible Valve Corp., Palisades Park, N. J.
Fisher Governor Co., Marshalltown, Ia.
Foster Engineering Co., Union, N. J.
Fulton Sylphon Div., Robertshaw-Fulton Controls Co., Knoxville, Tenn.
General Controls Co., Glendale, Calif.
Golden Anderson Valve Specialty Co., Pittsburgh, Pa.
Hammel-Dahl, Div. of General Controls Co., Warwick, R. I.
Hanna Engineering Works, Chicago, Ill.
Homestead Valve Mfg. Co., Coraopolis, Pa.
Hubbell Corp., Mundelein, Ill.
Jordan Corp., Div. of OPW Corp., Cincinnati, O.
Keckley Co., O. C., Skokie, Ill.
Kieley & Mueller, Inc., Middletown, N. Y.
Klipfel Valves, Inc., Hamilton, O.
Leslie Co., Lyndhurst, N. J.
Mason-Neilan, Div. of Worthington Corp., Norwood, Mass.
McAlear Mfg. Co., Chicago, Ill.
Mercoid Corp., The, Chicago, Ill.
OPW Corp., Cincinnati, O.
Phillips & Co., H. A., Chicago, Ill.
Ross Valve Mfg. Co., Inc., Troy, N. Y.
Schutte & Koerting Co., Buck County, Pa.
Security Valves Corp., Glendale, Calif.
Sinclair-Collins Valve Co., Akron, O.

Spence Engineering Co., Inc., Walden, N. Y.
Squires Co., C. E., The, Cleveland, O.
Stickle Steam Specialties Co., Indianapolis, Ind.
Trerice Co., H. O., Detroit, Mich.
Valcor Engineering Corp., Kenilworth, N. J.
Whittaker Controls, A Div. of Telecomputing Corp., Los Angeles, Calif.

VALVES, PLASTIC

Alpha Plastics, Inc., Livingston, N. J. (PVC)
American Agile Corp., Bedford, O.
American Flow Control Corp., Houston, Tex.
American Hard Rubber Co., Div. of Amerace Corp., Butler, N. J.
Argo Plastic Products, Cleveland, O.
Atlas Mineral Products Co., Mertztown, Pa.
Chemtrol, Lynwood, Calif.
Colonial Plastics Mfg. Co., Industrial Div., Cleveland, O. (Diaphragm Valves)
Dahl, G. W., Bristol, R. I.
Dow Chemical Co., The, Midland, Mich. (saran-lined)
Goodrich Industrial Products Co., B. F., Akron, O. (rigid)
Goodrich Industrial Products Co., B. F., Koroseal Div., Marietta, O.
Grinnell Co., Inc., Providence, R. I.
Haveg Industries, Inc., Wilmington, Del.
Hills-McCanna Co., Chicago, Ill.
Industrial Plastic Fabricators, Inc., Norwood, Mass. (PVC)
Jamesbury Corp., Worcester, Mass.
Kraloy Plastic Pipe Co., Inc., Los Angeles, Calif.
LaFavorite Rubber Mfg. Co., Hawthorne, N. J.
Lunkenheimer Co., Cincinnati, O. (PVC)
Luzerne Rubber Co., Trenton, N. J.
Mannesmann-Easton Plastic Products Co., Inc., Easton, Pa. (rigid, unplasticized polyvinyl chloride)
Ryerson & Son, Inc., Joseph T., Chicago, Ill.
Saran Lined Pipe Co., Ferndale, Mich. (saran)
Seelye Craftsmen, The, Minneapolis, Minn.
Skyline Industries Sales, Inc., Titusville, Pa.
Sloane Mfg. Co., Sun Valley, Calif.
Tube Turns Plastics Inc., Louisville, Ky. (PVC)
United States Rubber Co., New York, N. Y.
Valcor Engineering Corp., Kenilworth, N. J.
Vanton Pump & Equipment Corp., Hillside, N. J.
Walworth Co., New York, N. Y.

VALVES, PLUG

Alco Products, Inc., Schenectady, N. Y.
Alpha Plastics, Inc., Livingston, N. J. (PVC)
American Car & Foundry Div. of ACF Industries, Inc., New York, N. Y.
Ampco Metal, Inc., Milwaukee, Wis.
Andale Co., Philadelphia, Pa.
Barrett Haentjens & Co., Hazleton, Pa.
Bordo Co., Inc., L. J., Glenside, Pa.
California Brass Mfg. Co., Los Angeles, Calif.
Cameron Iron Works, Inc., Houston, Tex.
Circle Seal Products Co., Inc., Pasadena, Calif.
Colonial Plastics Mfg. Co., Industrial Div., Cleveland, O. (plastic)
Clow & Sons, Inc., James B., Chicago, Ill.
Cooper Alloy Corp., Hillside, N. J.
Corning Glass Works, Corning, N. Y.
Couplings Co., Chicago, Ill.
Crane Co., Chicago, Ill.
Detroit Controls Div., American-Standard, Stratford, Conn.
De Zurik Corp., Sartell, Minn. (rubber faced)
Duriron Co., Inc., Dayton, O. (Acid resisting)
Faber Engineering Co., Inc., Norristown, Pa.
Fabri-Valve Co. of America, Portland, Ore.
Gato Valve Co., Pittsburgh, Pa.
General Ceramics Corp., Keasbey, N. J. (Chemical stoneware & porcelain)
Gilbert Brass Foundry Co., St. Louis, Mo.
Hamer Valves Inc., Long Beach, Calif.
Hays Mfg. Co., Erie, Pa.
Hetherington & Berner, Inc., Indianapolis, Ind.
Homestead Valve Mfg. Co., Coraopolis, Pa.
Imperial Brass Mfg. Co., Chicago, Ill.
Industrial Plastic Fabricators, Norwood, Mass. (PVC)
Jamesbury Corp., Worcester, Mass.
Jenkins Bros., New York, N. Y.
Kerotest Mfg. Co., Pittsburgh, Pa.
Knight, Maurice A., Akron, O. (Stoneware for acids)
Ladish Co., Cudahy, Wis.
Ladish Co., Tri-Clover Div., Kenosha, Wis.
Ludlow Valve Mfg. Co., Inc., Troy, N. Y.
Lunkenheimer Co., Cincinnati, O.
Luzerne Rubber Co., Trenton, N. J. (Hard (rubber and rigid PVC)
McDonald Mfg. Co., A. Y., Dubuque, Ia.
Mueller Co., Decatur, Ill.
National Airoil Burner Co., Inc., Philadelphia, Pa.
P-K Industries, Inc., North Arlington, N. J.
Parks-Cramer Co., Fitchburg, Mass. (jacketed)
Pittsburgh Brass Mfg. Co., Pittsburgh, Pa.
Pittsburgh Valve Co., Reedsville, W. Va.
Powell Co., Wm., The, Cincinnati, O.
R-P & C Valve Div., American Chain & Cable Co., Inc., Reading, Pa.
Republic Mfg. Co., Cleveland, O.
Reynolds Water Conditioning Co., Detroit.
Saran Lined Pipe Co., Ferndale, Mich. (Saran lined)
Schutte & Koerting Co., Cornwells Heights, Bucks County, Pa.
Smith Co., S. Morgan, York, Pa.
Stockham Valves & Fittings, Birmingham, Ala.
Taylor Instrument Companies, Rochester, N. Y.
Texstream Corp., Houston, Tex. (non-lubricated)
Thermac Co., Corona, Calif.
Tube Turns Plastics, Inc., Louisville, Ky. (Injection molded PVC)
Vanton Pump & Equipment Corp., Hillside, N. J. (plastic)
Victaulic Co. of America, Elizabeth, N. J.
Vogt Machine Co., Henry, Louisville, Ky.
W-K-M, Div. of ACF Industries, Inc., Houston, Tex.
Weatherhead Co., The, Ft. Wayne Div., Ft. Wayne, Ind.
Wedgeplug Valve Co., Div. of Stockham Valves & Fittings, Birmingham, Ala.
Welsbach Corp., The, Kitson Valve Div., Philadelphia, Pa.
Whittaker Controls, A Div. of Telecomputing Corp., Los Angeles, Calif.

VALVE POSITION INDICATORS

See Indicators, Valve, Position

VALVES, PRESSURE REDUCING AND PRESSURE RELIEF, WATER

(Including Provisions for Emergency Boiler Feeding)

Airmatic Valve, Inc., Cleveland, O.
American Flow Control Corp., Houston, Tex.
Bell & Gossett Co., Morton Grove, Ill.
Black, Sivalls & Bryson, Inc., Kansas City, Mo.
Cash Valve Mfg. Corp., A. W., Decatur, Ill.
Cla-Val Co., Newport Beach, Calif.
Conoflow Corp., Subsidiary of Walworth Co., Philadelphia, Pa.
Defender Instrument & Regulator Co., Boody, Ill.
Fischer & Porter Co., Hatboro, Pa.
Foster Engineering Co., Union, N. J.
General Controls Co., Glendale, Calif.
Hammel-Dahl, Div. of General Controls Co., Warwick, R. I.
Instruments, Inc., Tulsa, Okla.
Keckley Co., O. C., Skokie, Ill.
Kieley & Mueller, Inc., Middletown, N. Y.
Leslie Co., Lyndhurst, N. J.
Milton Roy Co., Philadelphia, Pa.
Mueller Co., Decatur, Ill.
Sall Bros. Co., Rockford, Ill.
Schutte & Koerting Co., Cornwells Heights, Bucks County, Pa.
Squires Co., C. E., The, Cleveland, O.
Trerice Co., H. O., Detroit, Mich.
Valves, Inc., F. G., Milwaukee, Wis.
Watts Regulator Co., Lawrence, Mass.

VALVES, PRESSURE REDUCING AND REGULATING, AIR AND GAS

A-P Controls Div., Controls Co. of America, Milwaukee, Wis.
American Car & Foundry Div. of ACF Industries, Inc., New York.
American Flow Control Corp., Houston, Tex.
Aminco Refrigeration Products, American Injector Co., Detroit, Mich.
Associated Valve & Engineering Co., North Wales, Fla.
Atlas Valve Co., Newark, N. J.
Autoclave Engineers Sales Corp., Erie, Pa.
Bailey Co., Chas. M., San Francisco, Calif.
Barber-Colman Co., Rockford, Ill.
Beaton & Cadwell Mfg. Co., New Britain, Conn.
Black, Sivalls & Bryson, Inc., Kansas City, Mo.
Boylston Steam Specialty Co., Chicago, Ill.
Bristol Co., The, Waterbury, Conn.
CCA Products, Inc., Glendale, Calif.
Cash Co., A. W., Decatur, Ill.
Cash Valve Mfg. Corp., A. W., Decatur, Ill.
Chaplin-Fulton Mfg. Co., Pittsburgh, Pa.
Clark Mfg. Co., Cleveland, O.
Cochrane Corp., Philadelphia, Pa.
Conoflow Corp., Subsidiary of Walworth Co., Philadelphia, Pa.
Copes-Vulcan Div., Blaw-Knox Co., Erie, Pa.
Crane Co., Chicago, Ill.
Davis Regulator Co., Chicago, Ill.
Defender Instrument & Regulator Co., Boody, Ill.
d'Este Div., Kaye & MacDonald, Inc., West Orange, N. J.
DeVilbiss Co., The, Toledo, O.
Dockson Corp., Detroit, Mich.
Eclipse Fuel Engineering Co., Rockford, Ill.
Farris Flexible Valve Corp., Palisades Park, N. J.
Fischer & Porter Co., Hatboro, Pa.
Fisher Governor Co., Marshalltown, Ia.
Foster Engineering Co., Union, N. J.
Fulton Sylphon Div., Robertshaw-Fulton Controls Co., Knoxville, Tenn.
Gas & Oil Industry Laboratories, Inc., Irvington, N. J.
General Controls Co., Glendale, Calif., and Skokie, Ill.
Golden Anderson Valve Specialty Co., Pittsburgh, Pa.
Grove Valve and Regulator Co., Oakland, Calif.
Hagan Chemicals & Controls, Inc., Pittsburgh, Pa.
Hammel-Dahl, Div. of General Controls Co., Warwick, R. I.
Hanna Engineering Wks., Chicago, Ill.
Harris Calorific Co., The, Cleveland, O.
Hauck Mfg. Co., Brooklyn, N. Y.
Hoffman Specialty Mfg. Corp., Indianapolis.
Hubbell Corp., Mundelein, Ill.
Jordan Corp., Div. of OPW Corp., Cincinnati, O.
Keckley Co., O. C., Skokie, Ill.
Kieley & Mueller, Inc., Middletown, N. Y.
Klipfel Valves, Inc., Hamilton, O.
Leslie Co., Lyndhurst, N. J.
Liquid Carbonic Div. of General Dynamics Corp., Chicago, Ill.
Locke Regulator Co., Salem, Mass.
Mason-Neilan, Div. of Worthington Corp., Norwood, Mass.
Maxitrol Co., Detroit, Mich.
McAlear Mfg. Co., Chicago, Ill.
Minneapolis-Honeywell Regulator Co., Industrial Div., Philadelphia, Pa.
Modern Engineering Co., St. Louis, Mo.
Mueller Co., Decatur, Ill.
Norgren Co., C. A., Englewood, Colo.
Norwalk Valve Div., Eclipse Fuel Engineering Co., Rockford, Ill.
OPW Corp., Cincinnati, O.
P-K Industries, Inc., North Arlington, N. J.
Powers Regulator Co., Skokie, Ill.
Refrigerating Specialties Co., Chicago, Ill.
Research Vacuum Supply Co., Chicago, Ill.
Ross Valve Mfg. Co., Inc., Troy, N. Y.
Ruggles-Klingemann Mfg. Co., Boston, Mass.
Schade Valve Mfg. Co., Philadelphia, Pa.
Schutte and Koerting Co., Cornwells Heights, Bucks County, Pa.
Scientific Instrument Co., Detroit, Mich.
Spence Engineering Co., Inc., Walden, N. Y.
Squires Co., C. E., Cleveland, O.
Strong, Carlisle & Hammond, Cleveland, O.
Sullivan Valve & Engineering Co., Butte, Mont.
Taylor Instrument Companies, Rochester, N. Y.
Thrush & Co., H. A., Peru, Ind.
Trerice Co., H. O., Detroit, Mich.
Triplex Heating Specialty Co., Inc., Peru, Ind.
Tryco Products, Inc., Westfield, Mass.
Uehling Instrument Co., Paterson, N. J.
Universal Controls Corp., Dallas, Tex.
Warren Engineering Co., Broadway, N. J.
Watson & McDaniel Co., Philadelphia, Pa.
Watts Regulator Co., Lawrence, Mass.

Westinghouse Air Brake Co., Industrial Products Div., Wilmerding, Pa.
Whittaker Controls, A Div. of Telecomputing Corp., Los Angeles, Calif.

VALVES, PRESSURE REDUCING AND REGULATING, HOT WATER

A-P Controls Div., Controls Co. of America, Milwaukee, Wis.
Airmatic Valve Inc., Cleveland, O.
Atlas Valve Co., Newark, N. J.
Bailey Co., Chas. M., San Francisco, Calif.
Bailey Meter Co., Cleveland, O.
Beaton & Cadwell Mfg. Co., New Britain, Conn.
Bell & Gossett Co., Morton Grove, Ill.
Black, Sivalls & Bryson, Inc., Kansas City, Mo.
Boylston Steam Specialty Co., Chicago, Ill.
Bristol Co., The, Waterbury, Conn.
Cash Co., A. W., Decatur, Ill.
Cash Valve Mfg. Corp., A. W., Decatur, Ill.
Clark Mfg. Co., Cleveland, O.
Cla-Val Co., Newport Beach, Calif.
Conoflow Corp., Subsidiary of Walworth Co., Philadelphia, Pa.
Copes-Vulcan Div., Blaw-Knox Co., Erie, Pa.
Crane Co., Chicago, Ill.
Davis Regulator Co., Chicago, Ill.
Defender Instrument and Regulator Co., Boody, Ill.
d'Este Div., Kaye & MacDonald, Inc., West Orange, N. J.
Dunham-Bush, Inc., West Hartford, Conn.
Fischer & Porter Co., Hatboro, Pa.
Fisher Governor Co., Marshalltown, Ia.
Foster Engineering Co., Union, N. J.
Fulton Sylphon Div., Robertshaw-Fulton Controls Co., Knoxville, Tenn.
Golden Anderson Valve Specialty Co., Pittsburgh, Pa.
Hammel-Dahl, Div. of General Controls Co., Warwick, R. I.
Hoffman Specialty Mfg. Corp., Indianapolis.
Jordan Corp., Div. of OPW Corp., Cincinnati, O.
Keckley Co., O. C., Skokie, Ill.
Kieley & Mueller, Inc., Middletown, N. Y.
Klipfel Valves, Inc., Hamilton, O.
Leslie Co., Lyndhurst, N. J.
Locke Regulator Co., Salem, Mass.
Mason-Neilan, Div. of Worthington Corp., Norwood, Mass.
McAlear Mfg. Co., Chicago, Ill.
Mueller Co., Decatur, Ill.
OPW Corp., Cincinnati, O.
Powers Regulator Co., Skokie, Ill.
Republic Flow Meters Co., Chicago, Ill.
Ross Valve Mfg. Co., Inc., Troy, N. Y.
Sall Bros. Co., Rockford, Ill.
Sarcotherm Controls, Inc., New York, N. Y.
Schade Valve Mfg. Co., Philadelphia, Pa.
Schutte & Koerting Co., Cornwells Heights, Bucks County, Pa.
Scientific Instrument Co., Detroit, Mich.
Spence Engineering Co., Inc., Walden, N. Y.
Squires Co., C. E., The, Cleveland, O.
Stickle Steam Specialties Co., Indianapolis, Ind.
Strong, Carlisle & Hammond, Cleveland, O.
Taco Heaters, Inc., Cranston, R. I.
Taylor Instrument Companies, Rochester, N. Y.
Thrush & Co., H. A., Peru, Ind.
Trerice Co., H. O., Detroit, Mich.
Triplex Heating Specialty Co., Inc., Peru, Ind.
Valves, Inc., F. G., Milwaukee, Wis.
Vapor Heating Corp., Chicago, Ill.
Warren Engineering Co., Broadway, N. J.
Watson & McDaniel Co., Philadelphia, Pa.
Watts Regulator Co., Lawrence, Mass.
Webster & Co., Warren, Camden, N. J.
White Flomatic Corp., Hoosick Falls, N. Y.

VALVES, PRESSURE REDUCING AND REGULATING, LIQUID

Atlas Valve Co., Newark, N. J.
Clark Mfg. Co., Cleveland, O.
Cla-Val Co., Newport Beach, Calif.
d'Este Div., Kaye & MacDonald, Inc., West Orange, N. J.
Eddington Metal Specialty Co., Eddington, Pa.
Foster Engineering Co., Union, N. J.
Fulton Sylphon Div., Robertshaw-Fulton Controls Co., Knoxville, Tenn.
Hagan Chemicals & Controls, Inc., Pittsburgh, Pa.
Hammel-Dahl, Div. of General Controls Co., Warwick, R. I.
Jordan Corp., Div. of OPW Corp., Cincinnati, O.
Keckley Co., O. C., Skokie, Ill.
Kieley & Mueller, Inc., Middletown, N. Y.
Klipfel Valves, Inc., Hamilton, O.
Mason-Neilan Div. of Worthington Corp., Norwood, Mass.
McAlear Mfg. Co., Chicago, Ill.
Republic Flow Meters Co., Chicago, Ill.
Ross Valve & Mfg. Co., Inc., Troy, N. Y.
Simplex Valve & Meter Co., Lancaster, Pa.
Spence Engineering Co., Inc., Walden, N. Y.
Squires Co., C. E., The, Cleveland, O.
Tryco Products, Inc., Westfield, Mass.
Warren Engineering Co., Broadway, N. J.
Watkins Co., J. E., Maywood, Ill.

VALVES, PRESSURE REDUCING AND REGULATING, STEAM

Aerco Corp., Northvale, N. J.
Airmatic Valve, Inc., Cleveland, O.
Associated Valve & Engineering Co., North Wales, Pa.
Atlas Valve Co., Newark, N. J.
Bailey Co., Chas. M., San Francisco, Calif.
Bailey Meter Co., Cleveland, O.
Boylston Steam Specialty Co., Chicago, Ill.
Bristol Co., The, Waterbury, Conn.
Brooke Engineering Co., Inc., Philadelphia, Pa.
Cash Co., A. W., Decatur, Ill.
Cash Valve Mfg. Corp., A. W., Decatur, Ill.
Clark Mfg. Co., Cleveland, O.
Cochrane Corp., Philadelphia, Pa.
Conoflow Corp., Subsidiary of Walworth Co., Philadelphia, Pa.
Copes-Vulcan Div., Blaw-Knox Co., Erie, Pa.
Crane Co., Chicago, Ill.
Davis Regulator Co., Chicago, Ill.
Defender Instrument and Regulator Co., Boody, Ill.
d'Este Div., Kaye & MacDonald, Inc., West Orange, N. J.
Dunham-Bush, Inc., West Hartford, Conn.
Fisher Governor Co., Marshalltown, Ia.
Foster Engineering Co., Union, N. J.
Fulton Sylphon Div., Robertshaw-Fulton Controls Co., Knoxville, Tenn.
Golden Anderson Valve Specialty Co., Pittsburgh, Pa.
Grove Valve and Regulator Co., Oakland, Calif.
Hammel-Dahl, Div. of General Controls Co., Warwick, R. I.
Hoffman Specialty Mfg. Corp., Indianapolis.
Illinois Engineering Products, American Air Filter Co., Inc., Louisville, Ky.
Jordan Corp., Div. of OPW Corp., Cincinnati, O.
Keckley Co., O. C., Skokie, Ill.
Kieley & Mueller, Inc., Middletown, N. Y.
Klipfel Valves, Inc., Hamilton, O.
Leslie Co., Lyndhurst, N. J.
Locke Regulator Co., Salem, Mass.
Manning, Maxwell & Moore, Inc., Stratford, Conn.
Mason-Neilan, Div. of Worthington Corp., Norwood, Mass.
McAlear Mfg. Co., Chicago, Ill.
Mueller Co., Decatur, Ill.
OPW Corp., Cincinnati, O.
P-K Industries, Inc., North Arlington, N. J.
Powers Regulator Co., Skokie, Ill.
Republic Flow Meters Co., Chicago, Ill.
Ross Valve Mfg. Co., Inc., Troy, N. Y.
Ruggles-Klingemann Mfg. Co., Boston, Mass.
Sarco Co., Inc., New York, N. Y.
Sarcotherm Controls, Inc., New York, N. Y.
Schade Valve Mfg. Co., Philadelphia, Pa.
Schutte and Koerting Co., Cornwells Heights, Bucks County, Pa.
Scientific Instrument Co., Detroit, Mich.
Spence Engineering Co., Inc., Walden, N. Y.
Squires Co., C. E., The, Cleveland, O.
Staples & Pfeiffer, San Francisco, Calif.
Stickle Steam Specialties Co., Indianapolis, Ind.
Strong, Carlisle & Hammond, Cleveland, O.
Taylor Instrument Companies, Rochester, N. Y.
Trerice Co., H. O., Detroit, Mich.
Vapor Heating Corp., Chicago, Ill.
Warren Engineering Co., Broadway, N. J.
Watson & McDaniel Co., Philadelphia, Pa.
Watts Regulator Co., Lawrence, Mass.

VALVES, PUMP

Anchor Packing Co., Philadelphia, Pa.
Atlas Valve Co., Newark, N. J.
Burrows Mfg. Co., F. A., York, Pa.
Cla-Val Co., Newport Beach, Calif.
Clayton Mark & Co., Evanston, Ill.
Coffin Co., Jr., J. S., Englewood, N. J.
Darcoid Co., Inc., New York, N. Y.
Defender Instrument & Regulator Co., Boody, Ill.
Durabla Mfg. Co., New York, N. Y.
Farris Engineering Corp., Palisades Park, N. J.
Garlock Packing Co., Palmyra, N. Y.
Goodrich Industrial Products Co., Akron, O.
Hill Pump Valve Co., Chicago, Ill.
Homestead Valve Mfg. Co., Coraopolis, Pa.
Ladish Co., Cudahy, Wis.
Lancaster Pump & Mfg. Co., Lancaster, Pa.
Madden Corp., The, Chicago, Ill.
McDonald Mfg. Co., A. Y., Dubuque, Ia.
Myers & Bro. Co., F. E., The, Ashland, O.
New York Belting & Packing Co., Passaic, N. J.
Philadelphia Pump Div., American Meter Co., Philadelphia, Pa.
Sims Pump Valve Co., Hoboken, N. J.
United States Rubber Company, New York, N. Y.
Valves, Inc., F. G., Milwaukee, Wis.
Watts Regulator Co., Lawrence, Mass.
Webster Electric Co., Racine, Wis.
White Flomatic Corp., Hoosick Falls, N. Y.
Williams Gauge Co., Inc., The, Pittsburgh, Pa.

VALVES, QUICK OPENING

Alloy Steel Products Co., Linden, N. J. (Stainless steel)
American Flow Control Corp., Houston, Tex.
Anderson Brass Co., Detroit, Mich.
Atkomatic Valve Co., Inc., Indianapolis, Ind.
Automatic Switch Co., Florham Park, N. J.
Barksdale Valves, Los Angeles, Calif.
Chapman Valve Mfg. Co., The, Indian Orchard, Springfield, Mass.
Conoflow Corp., Subsidiary of Walworth Co., Philadelphia, Pa.
Cooper Alloy Corp., Hillside, N. J.
Crane Co., Chicago, Ill.
Dahl, G. W., Bristol, R. I.
Darling Valve & Mfg. Co., Williamsport, Pa.
Defender Instrument & Regulator Co., Boody, Ill.
Detroit Controls Div., American-Standard, Stratford, Conn.
Dole Refrigerating Co., Chicago, Ill.
Fairbanks Co., The, New York, N. Y.
Farris Flexible Valve Corp., Palisades Park, N. J.
Grinnell Co., Inc., Providence, R. I.
Hamer Valves, Inc., Long Beach, Calif.
Hammel-Dahl, Div. of General Controls Co., Warwick, R. I.
Hammond Valve Corp., Hammond, Ind.
Hills-McCanna Co., Chicago, Ill.
Homestead Valve Mfg. Co., Coraopolis, Pa.
Imperial Brass Mfg. Co., Chicago, Ill.
Jamesbury Corp., Worcester, Mass.
Jenkins Bros., New York, N. Y.
Johnson Service Co., Milwaukee, Wis.
Jordan Corp., Div. of OPW Corp., Cincinnati, O.
Kerotest Mfg. Co., Pittsburgh, Pa.
Kieley & Mueller, Inc., Middletown, N. Y.
Klipfel Valves, Inc., Hamilton, O.
Ladish Co., Cudahy, Wis.
Leslie Co., Lyndhurst, N. J.
Lunkenheimer Co., Cincinnati, O.
McDonald Mfg. Co., A. Y., Dubuque, Ia.
Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.
OPW Corp., Cincinnati, O.
Ohio Brass Co., Mansfield, O.
Ohio Injector Co., Wadsworth, O.
Okadee Co., Chicago, Ill.
P-K Industries, Inc., North Arlington, N. J.
Paul Valve Corp., New York, N. Y.
Penberthy Mfg. Co., Div. of Buffalo Eclipse Corp., Detroit, Mich.
Powell Co., Wm., The, Cincinnati, O.
R.K.L. Valve & Mfg. Co., Maple Shade, N. J.
Research Vacuum Supply Co., Chicago, Ill.
Rockwell Co., W. S., Fairfield, Conn.
Rockwell Mfg. Co., Meter & Valve Div., Pittsburgh, Pa.
Rockwood Sprinkler Co., Worcester, Mass.
Ross Valve Mfg. Co., Inc., Troy, N. Y.

Ruggles-Klingemann Mfg. Co., Boston, Mass.
Semet-Solvay Engineering Div., Allied Chemical Corp., New York, N. Y.
Skinner Electric Valve Div., The Skinner Chuck Co., New Britain, Conn.
Squires Co., C. E., The, Cleveland, O.
Stockham Valves & Fittings, Birmingham, Ala.
Superior Valve & Fittings Co., Pittsburgh, Pa.
Taylor Instrument Companies, Rochester, N. Y.
Walworth Co., New York, N. Y.
Worcester Valve Co., Inc., Worcester, Mass.

VALVES, RADIATOR, AIR, FOR HOT WATER RADIATORS

Anderson Products, Inc., Cambridge, Mass.
Beacon Brass Co., Waltham, Mass.
Beaton & Cadwell Mfg. Co., New Britain, Conn.
Beaton & Corbin Mfg. Co., Southington, Conn.
Dole Valve Co., The, Morton Grove, Ill.
Econo Products Co., Inc., Div. of Viking Instruments, Inc., East Haddam, Conn.
Fulton Sylphon Div., Robertshaw-Fulton Controls Co., Knoxville, Tenn.
G & H Mfg. Co., Philadelphia, Pa.
Hammond Valve Corp., Hammond, Ind.
Hoffman Specialty Mfg. Corp., Indianapolis, Ind.
Jenkins Bros., New York, N. Y.
Keeney Mfg. Co., Newington, Conn.
Little Brass Goods Co., M. S., Hartford, Conn.
Maid-O'Mist, Inc., Chicago, Ill.
Marsh Heating Equipment Co., Skokie, Ill.
Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.
New York Air Valve Corp., Brooklyn, N. Y.
Powell Co., Wm., The, Cincinnati, O.
Quality Specialty Co., Inc., Camden, N. J.
Ra-Rich Mfg. Corp., Holtsville, Long Island, N. Y.
Sarco Co., Inc., New York, N. Y.
Sarcotherm Controls, Inc., New York, N. Y.
Squires Co., C. E., The, Cleveland, O.
Taco Heaters, Inc., Cranston, R. I.
Thrush & Co., H. A., Peru, Ind.
Triplex Heating Specialty Co., Inc., Peru, Ind.

VALVES, RADIATOR, AIR, FOR STEAM RADIATORS

Anderson Products, Inc., Cambridge, Mass.
Beacon Brass Co., Waltham, Mass.
Bridgeport Brass Co., Bridgeport, Conn.
Detroit Controls Div. of American Standard, Detroit, Mich.
Dole Valve Co., The, Morton Grove, Ill.
Econo Products Co., Inc., Div. of Viking Instruments, Inc., East Haddam, Conn.
Fulton Sylphon Div., Robertshaw-Fulton Controls Co., Knoxville, Tenn.
Gorton Heating Co., Cranford, N. J.
Hammond Valve Corp., Hammond, Ind.
Heat-Timer Corp., New York, N. Y.
Hoffman Specialty Mfg. Corp., Indianapolis, Ind.
Jenkins Bros., New York, N. Y.
Keeney Mfg. Co., Newington, Conn.
Marsh Heating Equipment Co., Skokie, Ill.
Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.
New York Air Valve Corp., Brooklyn, N. Y.
Ohio Injector Co., Wadsworth, O.
Powell Co., Wm., The, Cincinnati, O.
Ra-Rich Mfg. Corp., Holtsville, Long Island, N. Y.
Sarco Co., Inc., New York, N. Y.
Sarcotherm Controls, Inc., New York, N. Y.
Squires Co., C. E., The, Cleveland, O.
Taco Heaters, Inc., Cranston, R. I.

VALVES, RADIATOR, AUTOMATIC TEMPERATURE CONTROL, ELECTRIC

Barber-Colman Co., Rockford, Ill.
Fulton Sylphon Div., Robertshaw-Fulton Controls Co., Knoxville, Tenn.
General Controls Co., Glendale, Calif., and Skokie, Ill.
Jenkins Bros., New York, N. Y.
Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.
National Controls, Inc., Newton, Mass.
Sarcotherm Controls, Inc., New York, N. Y.
Vapor Heating Corp., Chicago, Ill.

VALVES, RADIATOR, AUTOMATIC TEMPERATURE CONTROL, PACKLESS

Barber-Colman Co., Rockford, Ill.
Fulton Sylphon Div., Robertshaw-Fulton Controls Co., Knoxville, Tenn.
Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.
Powers Regulator Co., Skokie, Ill.
Squires Co., C. E., The, Cleveland, O.
Sterling, Inc., Milwaukee, Wis.

VALVES, RADIATOR, AUTOMATIC TEMPERATURE CONTROL, PNEUMATIC

Johnson Service Co., Milwaukee, Wis.
Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.
Powers Regulator Co., Skokie, Ill.
R.K.L. Valve & Mfg. Co., Maple Shade, N. J.

VALVES, RADIATOR, AUTOMATIC TEMPERATURE CONTROL, SELF-CONTAINED

Barber-Colman Co., Rockford, Ill.
Fulton Sylphon Div., Robertshaw-Fulton Controls Co., Knoxville, Tenn.
General Controls Co., Glendale, Calif.
Heat Timer Corp., New York, N. Y.
Jordan Corp., Div. of OPW Corp., Cincinnati, O.
Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.
Sarco Co., Inc., New York, N. Y.
Squires Co., C. E. The, Cleveland, O.
Sterling, Inc., Milwaukee, Wis.
Trane Co., The, LaCrosse, Wis.

VALVES, RADIATOR, AUTOMATIC TEMPERATURE CONTROL, SELF-CONTAINED, PACKLESS

Fulton Sylphon Div., Robertshaw-Fulton Controls Co., Knoxville, Tenn.
Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.
Powers Regulator Co., Skokie, Ill.
Sarco Co., Inc., New York, N. Y.
Squires Co., C. E., The, Cleveland, O.
Sterling, Inc., Milwaukee, Wis.

VALVES, RADIATOR, ORIFICE

Barnes & Jones, Inc., Newtonville, Mass.
Cashin Co., W. D., Boston, Mass.
Dunham-Bush, Inc., West Hartford, Conn.
Illinois Engineering Products, American Air Filter Co., Inc., Louisville, Ky.
Jenkins Bros., New York, N. Y.
Marsh Valve Co., Dunkirk, N. Y.
Sarco Co., Inc., New York, N. Y.
Sarcotherm Controls, Inc., New York, N. Y.
Trane Co., The, LaCrosse, Wis.
Webster & Co., Warren, Camden, N. J.

VALVES, RADIATOR, STEAM AND HOT WATER, HAND

Barnes & Jones, Inc., Newtonville, Mass.
Cashin Co., W. D., Boston, Mass.
Chase Brass & Copper Co., Waterbury, Conn.
Crane Co., Chicago, Ill.
Detroit Controls Div. of American-Standard, Detroit, Mich.
Dunham-Bush, Inc., West Hartford, Conn.
Fairbanks Co., The, New York, N. Y.
Hammond Valve Corp., Hammond, Ind.
Hoffman Specialty Mfg. Corp., Indianapolis, Ind.
Illinois Engineering Products, American Air Filter Co., Inc., Louisville, Ky.
Jenkins Bros., New York, N. Y.
Kennedy Valve Mfg. Co., Elmira, N. Y.
Kritzer Radiant Coils, Inc., Batavia, Ill.
Marsh Heating Equipment Co., Skokie, Ill.
Marsh Valve Co., Dunkirk, N. Y.
Milwaukee Valve Co., Milwaukee, Wis.
Ohio Brass Co., Mansfield, O.
Powell Co., Wm., The, Cincinnati, O.
Sarco Co., Inc., New York, N. Y.
Sarcotherm Controls, Inc., New York, N. Y.
Squires Co., C. E., The, Cleveland, O.
Sterling, Inc., Milwaukee, Wis.
Trane Co., The, La Crosse, Wis.
Webster & Co., Warren, Camden, N. J.

VALVES, RADIATOR, STEAM AND HOT WATER, MODULATING

Barber-Colman Co., Rockford, Ill.
Barnes & Jones, Inc., Newtonville, Mass.
Cashin Co., W. D., Boston, Mass.
Dunham-Bush, Inc., West Hartford, Conn.
Fulton Sylphon Div., Robertshaw-Fulton Controls Co., Knoxville, Tenn.
Hoffman Specialty Mfg. Corp., Indianapolis, Ind.
Jenkins Bros., New York, N. Y.
Johnson Service Co., Milwaukee, Wis.
Marsh Heating Equipment Co., Skokie, Ill.
Marsh Valve Co., Dunkirk, N. Y.
Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.
Ohio Brass Co., Mansfield, O.
Sarco Co., Inc., New York, N. Y.
Sarcotherm Controls, Inc., New York, N. Y.
Squires Co., C. E., The, Cleveland, O.
Sterling Inc., Milwaukee, Wis.
Webster & Co., Warren, Camden, N. Y.

VALVES, REFRIGERATION (ANGLE, CHECK, GATE, GLOBE, NEEDLE, RELIEF)

A-P Controls Div., Controls Co. of America, Milwaukee, Wis.
Automatic Switch Co., Florham Park, N. J.
Crane Co., Chicago, Ill.
Dersch, Gesswein & Neuert, Inc., Chicago, Ill.
Durabla Mfg. Co., New York, N. Y.
Frick Co., Waynesboro, Pa.
General-American Valve Co., Corona Del Mar, Calif.
Hammel-Dahl, Div. of General Controls Co., Warwick, R. I.
Henry Valve Co., Melrose Park, Ill.
Hills-McCanna Co., Chicago, Ill.
Hubbell Corp., Mundelein, Ill.
Imperial Brass Mfg. Co., Chicago, Ill.
Jamesbury Corp., Worcester, Mass.
Jenkins Bros., New York, N. Y.
Kerotest Mfg. Co., Pittsburgh, Pa.
Ladish Co., Cudahy, Wis.
Lunkenheimer Co., Cincinnati, O.
Marsh Instrument Co., Skokie, Ill.
Mueller Brass Co., Port Huron, Mich.
Okadee Co., Chicago, Ill.
Shank Co., Cyrus, Chicago, Ill.
Superior Valve and Fittings Co., Pittsburgh, Pa.
Vilter Mfg. Co., Milwaukee, Wis.
Vogt Machine Co., Henry, Louisville, Ky.
Weatherhead Co., The, Ft. Wayne Div., Ft. Wayne, Ind.
X-L Refrigerating Co., Chicago, Ill.
York Corp., Subsidiary of Borg-Warner Corp., York, Pa.

VALVES, REFRIGERATION, BACK PRESSURE

A-P Controls Div., Controls Co. of America, Milwaukee, Wis.
Alco Valve Co., St. Louis, Mo.
Aminco Refrigeration Products, American Injector Co., Detroit, Mich.
Bailey Co., Chas. M., San Francisco, Calif.
Cash Co., A. W., Decatur, Ill.
Cash Valve Mfg. Corp., A. W., Decatur, Ill.
Dersch, Gesswein & Neuert, Inc., Chicago, Ill.
Frigidaire Div., General Motors Corp., Dayton, O.
Hammel-Dahl, Div. of General Controls Co., Warwick, R. I.
Hubbell Corp., Mundelein, Ill.
Jordan Corp., Div. of OPW Corp., Cincinnati, O.
Metrex Valve Co., Franklin Park, Ill.
Mueller Brass Co., Port Huron, Mich.
Refrigerating Specialties Co., Chicago, Ill.
Taylor Instrument Companies, Rochester, N. Y.
Temprite Products Corp., Dept. HPAC, Birmingham, Mich.
York Corp., Subsid. of Borg-Warner Corp., York, Pa.

VALVES, REFRIGERATION, EXPANSION, CONSTANT PRESSURE

A-P Controls Div., Controls Co. of America, Milwaukee, Wis.
Alco Valve Co., St. Louis, Mo.
Cash Co., A. W., Decatur, Ill.
Crane Co., Chicago, Ill.
Detroit Controls Div. of American-Standard, Detroit, Mich.
Frigidaire Div., General Motors Corp., Dayton, O.
Hammel-Dahl, Div. of General Controls Co., Warwick, R. I.
Henry Valve Co., Melrose Park, Ill.
Hubbell Corp., Mundelein, Ill.
Lonergan Co., J. E., Philadelphia, Pa.
Metrex Valve Co., Franklin Park, Ill.
Refrigerating Specialties Co., Chicago, Ill.
Shank Co., Cyrus, Chicago, Ill.
Superior Valve & Fittings Co., Pittsburgh, Pa
York Corp., Subsid. of Borg-Warner Corp., York, Pa.

VALVES, REFRIGERATION, EXPANSION, THERMOSTATIC

A-P Controls Div., Controls Co. of America, Milwaukee, Wis.
Alco Valve Co., St. Louis, Mo.
Detroit Controls Div. of American-Standard, Detroit, Mich.
Frigidaire Div., General Motors Corp., Dayton, O.
General Controls Co., Glendale, Calif., and Skokie, Ill.
Metrex Valve Co., Franklin Park, Ill.
Sporlan Valve Co., St. Louis, Mo.
Tenney Engineering, Inc., Union, N. J.
X L Refrigerating Co., Chicago, Ill.
York Corp., Subsid. of Borg-Warner Corp., York, Pa.

VALVES, REFRIGERATION, FLOAT, HIGH PRESSURE

Alco Valve Co., St. Louis, Mo.
Amince Refrigeration Products, American Injector Co., Detroit, Mich.
Armstrong Machine Works, Three Rivers, Mich.
Foster Engineering Co., Union, N. J.
Frick Co., Waynesboro, Pa.
Hubbell Corp., Mundelein, Ill.
Mercoid Corp., Chicago, Ill.
Phillips & Co., H. A., Chicago, Ill.
Vilter Mfg. Co., Milwaukee, Wis.
Wabash Corp., Chicago, Ill.
York Corp., Subsidiary of Borg-Warner Corp., York, Pa.

VALVES, REFRIGERATION, FLOAT, HIGH PRESSURE AND LOW PRESSURE

Phillips & Co., H. A., Chicago, Ill.
Temprite Products Corp., Dept. HPAC, Birmingham, Mich.
Vilter Mfg. Co., Milwaukee, Wis.
York Corp., Subsidiary of Borg-Warner Corp., York, Pa.

VALVES, REFRIGERATION, LIQUID CONTROL, FLOAT PILOTED

Alco Valve Co., St. Louis, Mo.
Defender Instrument & Regulator Co., Boody, Ill.
Frick Co., Waynesboro, Pa.
Kieley & Mueller, Inc., Middletown, N. Y.
Metrex Valve Co., Franklin Park, Ill.
Phillips & Co., H. A., Chicago, Ill.
York Corp., Subsidiary of Borg-Warner Corp., York, Pa.

VALVES, REFRIGERATION, MAGNETIC STOP

A-P Controls Div., Controls Co. of America, Milwaukee, Wis.
Alco Valve Co., St. Louis, Mo.
Atkomatic Valve Co., Inc., Indianapolis, Ind.
Automatic Switch Co., Florham Park, N. J.
Detroit Controls Div. of American-Standard, Detroit, Mich.
Frick Co., Waynesboro, Pa.
General Controls Co., Glendale, Calif., and Skokie, Ill.
Hubbell Corp., Mundelein, Ill.
Jackes-Evans Mfg. Co., Controls Div., St. Louis, Mo.
Marsh Refrigeration Equipment Co., Affiliate Jas. P. Marsh Corp., Skokie, Ill.
Mercoid Corp., Chicago, Ill.
Metrex Valve Co., Franklin Park, Ill.
Penn Controls, Inc., Goshen, Ind.
Refrigerating Specialties Co., Chicago, Ill.
Sporlan Valve Co., St. Louis, Mo.
Watkins Co., J. E., Maywood, Ill.

VALVES, REFRIGERATION, TEMPERATURE REGULATING OR SNAP ACTION SUCTION

A-P Controls Div., Controls Co. of America, Milwaukee, Wis.
Alco Valve Co., St. Louis, Mo.
Aminco Refrigeration Products, American Injector Co., Detroit, Mich.
Frigidaire Div., General Motors Corp., Dayton, O.
Hubbell Corp., Mundelein, Ill.
Jordan Corp., Div. of OPW Corp., Cincinnati.
McCorkle Co., D. H., Berkeley, Calif.
Metrex Valve Co., Franklin Park, Ill.
Refrigerating Specialties Co., Chicago, Ill.
Superior Valve and Fittings Co., Pittsburgh, Pa.
Temprite Products Corp., Dept. HPAC, Birmingham, Mich.

VALVES, REFRIGERATION, WATER REGULATING, PRESSURE OR TEMPERATURE ACTUATED

A-P Controls Div., Controls Co. of America, Milwaukee, Wis.
Alco Valve Co., St. Louis, Mo.
Aminco Refrigeration Products, American Injector Co., Detroit, Mich.
Art Valve Co., Chicago, Ill.
Bailey Co., Chas. M., San Francisco, Calif.
Cash Co., A. W., Decatur, Ill.
Cash Valve Mfg. Corp., A. W., Decatur, Ill.
Chatleff Valve & Mfg. Co., Austin, Tex.
Foster Engineering Co., Union, N. J.
Frigidaire Div., General Motors Corp., Dayton, O.
General Controls Co., Glendale, Calif.
Jordan Corp., Div. of OPW Corp., Cincinnati, O.
Kieley & Mueller, Inc., Middletown, N. Y.
Marsh Refrigeration Equipment Co., Affiliate Jas. P. Marsh Corp., Skokie, Ill.
Mercoid Corp., Chicago, Ill.
Metrex Valve Co., Franklin Park, Ill.
Penn Controls, Inc., Goshen, Ind.
Powers Regulator Co., Skokie, Ill.
Refrigerating Specialties Co., Chicago, Ill.
Spence Engineering Co., Inc., Walden, N. Y.
York Corp., Subsidiary of Borg-Warner Corp., York, Pa.

VALVES, RELIEF, HOT WATER, COMBINED PRESSURE AND TEMPERATURE OPERATED

Beacon Brass Co., Waltham, Mass.
Beaton & Cadwell Mfg. Co., New Britain, Conn.
Cash Valve Mfg. Corp., A. W., Decatur, Ill.
Crane Co., Chicago, Ill.
Dole Valve Co., The, Morton Grove, Ill.
Foster Engineering Co., Union, N. J.
Kunkle Valve Co., Ft. Wayne, Ind.
McDonnell & Miller, Inc., Chicago, Ill.
Mueller Co., Decatur, Ill.
New York Air Valve Corp., Brooklyn, N. Y.
Patrol Valve Co., The, Cleveland, O.
Quality Specialty Co., Inc., Camden, N. J.
Sall Bros. Co., Rockford, Ill.
Schaible Co., The, Mariemont, O.
Thrush & Co., H. A. Peru, Ind.
Trane Co., The, La Crosse, Wis.
Trerice Co., H. O., Detroit, Mich.
Watts Regulator Co., Lawrence, Mass.
Welsbach Corp., The, Kitson Valve Div., Philadelphia, Pa.

VALVES, RELIEF, HOT WATER, PRESSURE OPERATED

Atlas Valve Co., Newark, N. J.
Bailey Co., Chas. M., San Francisco, Calif.
Beaton & Cadwell Mfg. Co., New Britain, Conn.
Bell & Gossett Co., Morton Grove, Ill.
Cash Valve Mfg. Corp., A. W., Decatur, Ill.
Cla-Val Co., Newport Beach, Calif.
Cochrane Corp., Philadelphia, Pa.
Crane Co., Chicago, Ill.
Crosby Valve & Gage Co., Wrentham, Mass.
Davis Regulator Co., Chicago, Ill
Defender Instrument & Regulator Co., Boody, Ill.
Dole Valve Co., The, Morton Grove, Ill.
Dunham-Bush, Inc., West Hartford, Conn.
Durabla Mfg. Co., New York, N. Y.
Eddy Valve Co., Waterford, N. Y.
Edward Valves, Inc., East Chicago, Ind.
Farris Engineering Corp., Palisades Park, N. J.
Golden Anderson Valve Specialty Co., Pittsburgh, Pa.
Hoffman Specialty Mfg. Corp., Indianapolis, Ind.
Jordan Corp., Div. of OPW Corp., Cincinnati, O.
Keckley Co., O. C., Skokie, Ill.
Kehm Corp., The, Chicago, Ill.
Kieley & Mueller, Inc., Middletown, N. Y.
Klipfel Valves, Inc., Hamilton, O.
Kunkle Valve Co., Ft. Wayne, Ind.
Longergan Co., J. E., Philadelphia, Pa.
Lunkenheimer Co., Cincinnati, O.
Manning, Maxwell & Moore, Inc., Stratford, Conn.
McAlear Mfg. Co., Chicago, Ill.
McDonald Mfg. Co., A. Y., Dubuque, Ia.
McDonnell & Miller, Inc., Chicago, Ill.
Milton Roy Co., Philadelphia, Pa.
Milwaukee Valve Co., Milwaukee, Wis.
Mueller Co., Decatur, Ill.
Multiplex Mfg. Co., Berwick, Pa.
Patrol Valve Co., The, Cleveland, O.
Philadelphia Pump Div., American Meter Co., Philadelphia, Pa.
Quality Specialty Co., Inc., Camden, N. J.
Sall Bros. Co., Rockford, Ill.
Sarcotherm Controls, Inc., New York, N. Y.
Schade Valve Mfg. Co., Philadelphia, Pa.
Scott Valve Mfg. Co., Detroit, Mich.
Taco Heaters, Inc., Cranston, R. I.
Texstream Corp., Houston, Tex.
Thrush & Co., H. A., Peru, Ind.
Trane Co., The, La Crosse, Wis.
Trerice Co., H. O., Detroit, Mich.
Triplex Heating Specialty Co., Inc., Peru, Ind.
Tryco Products, Inc., Westfield, Mass.
Watson & McDaniel Co., Philadelphia, Pa.
Watts Regulator Co., Lawrence, Mass.
Welsbach Corp., The, Kitson Valve Div., Philadelphia, Pa.

VALVES, RELIEF, HOT WATER, PRESSURE OPERATED, SELF-FILLING

Bailey Co., Chas. M., San Francisco, Calif.
Beaton & Cadwell Mfg. Co., New Britain, Conn.
Bell & Gossett Co., Morton Grove, Ill.
Cash Valve Mfg. Corp., A. W., Decatur, Ill.
Crane Co., Chicago, Ill.
Kehm Corp., The, Chicago, Ill.
Klipfel Valves, Inc., Hamilton, O.
Mueller Co., Decatur, Ill.
Quality Specialty Co., Inc., Camden, N. J.
Sall Bros. Co., Rockford, Ill.
Sarcotherm Controls, Inc., New York, N. Y.
Taco Heaters, Inc., Cranston, R. I.
Thrush & Co., H. A., Peru, Ind.
Trerice Co., H. O., Detroit, Mich.
Watts Regulator Co., Lawrence, Mass.
Webster & Co., Warren, Camden, N. J.

VALVES, RELIEF, HYDRAULIC

Associated Valve & Engineering Co., North Wales, Pa.
Atlas Valve Co., Newark, N. J.
Bailey Co., Charles M., San Francisco, Calif.
Blackhawk Mfg. Co., Milwaukee, Wis.
Cameron Iron Works, Inc., Houston, Tex.
Cash Co., A. W., Decatur, Ill.
Cash Valve Mfg. Corp., A. W., Decatur, Ill.
Circle Seal Products Co., Inc., Pasadena, Calif.
Cla-Val Co., Newport Beach, Calif.
Commercial Shearing & Stamping Co., Youngstown, O.
Crane Co., Chicago, Ill.
Crosby Valve & Gage Co., Wrentham, Mass.

Farris Engineering Corp., Palisades Park, N. J.
Foster Engineering Co., Union, N. J.
Fulflo Specialties Co., Inc., The, Blanchester, O.
Golden Anderson Valve Specialty Co., Pittsburgh, Pa.
Greer Hydraulics, Inc., Jamaica, N. Y.
Hydronic Co., The, Detroit, Mich.
Kalamazoo Div., New York Air Brake Co., Kalamazoo, Mich.
Keckley Co., O. C., Skokie, Ill.
Kerotest Mfg. Co., Pittsburgh, Pa.
Klipfel Valves, Inc., Hamilton, O.
Kunkle Valve Co., Ft. Wayne, Ind.
Lancaster Pump & Mfg. Co., Lancaster, Pa.
Longergan Co., J. E., Philadelphia, Pa.
Lunkenheimer Co., Cincinnati, O.
Manning, Maxwell & Moore, Inc., Stratford, Conn.
McDonnell & Miller, Inc., Chicago, Ill.
Milton Roy Co., Philadelphia, Pa.
Pantex Mfg. Corp., Hydraulic Div., Pawtucket, R. I.
Philadelphia Pump Div., American Meter Co., Philadelphia, Pa.
Republic Mfg. Co., Inc., Cleveland, O.
Ross Valve Mfg. Co., Troy, N. Y.
Scott Valve Mfg. Co., Detroit, Mich.
Trane Co., The, La Crosse, Wis.
Tryco Products, Inc., Westfield, Mass.
Tuthill Pump Co., Chicago, Ill.
Webster Electric Co., Racine, Wis.
Whittaker Controls, A Div. of Telecomputing Corp., Los Angeles, Calif.
Wilson Co., K. R., Arcade, N. Y.

VALVES, RELIEF, OIL

American Car & Foundry Div. of ACF Industries, Inc., New York, N. Y.
Associated Valve & Engineering Co., North Wales, Pa.
Atlas Valve Co., Newark, N. J.
Bailey Co., Chas. M., San Francisco, Calif.
Cash Co., A. W., Decatur, Ill.
Cash Valve Mfg. Corp., A. W., Decatur, Ill.
Circle Seal Products Co., Inc., Pasadena, Calif.
Cla-Val Co., Newport Beach, Calif.
Crane Co., Chicago, Ill.
Crosby Valve & Gage Co., Wrentham, Mass.
Davis Regulator Corp., Chicago, Ill.
Durabla Mfg. Co., New York, N. Y.
Edward Valves, Inc., East Chicago, Ind.
Farris Engineering Corp., Palisades Park, N. J.
Fisher Governor Co., Marshalltown, Ia.
Foster Engineering Co., Union, N. J.
Fulflo Specialties Co., Inc., The, Blanchester, O.
Golden Anderson Valve Specialty Co., Pittsburgh, Pa.
Greer Hydraulics, Inc., Jamaica, N. Y.
Grove Valve and Regulator Co., Oakland, Calif.
Hammel-Dahl, Div. of General Controls Co., Warwick, R. I.
Hauck Mfg. Co., Brooklyn, N. Y.
Hubbell Corp., Mundelein, Ill.
Keckley Co., O. C., Skokie, Ill.
Kerotest Mfg. Co., Pittsburgh, Pa.
Kieley & Mueller, Inc., Middletown, N. Y.
Klipfel Valves, Inc., Hamilton, O.
Kunkle Valve Co., Ft. Wayne, Ind.
Locke Regulator Co., Salem, Mass.
Longergan Co., J. E., Philadelphia, Pa.
Lunkenheimer Co., Cincinnati, O.
Manning, Maxwell & Moore, Inc., Stratford, Conn.
McDonald Mfg. Co., A. Y., Dubuque, Ia.
Milton Roy Co., Philadelphia, Pa.
Milwaukee Valve Co., Milwaukee, Wis.
Morrison Brothers Co., Dubuque, Ia. (for oil handling)
Mueller Co., Decatur, Ill.
OPW Corp., Cincinnati, O.
Pantex Mfg. Corp., Hydraulics Div., Pawtucket, R. I.
Philadelphia Pump Div., American Meter Co., Philadelphia. Pa.
Preferred Utilities Mfg. Corp., New York.
Reliable Products Mfg. Co., Inc., Brooklyn, N. Y.
Republic Mfg. Co., Cleveland, O.
Ross Valve Mfg. Co., Inc., Troy, N. Y.
Schade Valve Mfg. Co., Philadelphia, Pa.
Schutte & Koerting Co., Cornwells Heights, Bucks County, Pa.
Scott Valve Mfg. Co., Detroit, Mich.

Skinner Electric Valve Div., The Skinner Chuck Co., New Britain, Conn.
Staples & Pfeiffer, San Francisco, Calif.
Texstream Corp., Houston, Tex.
Tuthill Pump Co., Chicago, Ill.
Watson & McDaniel Co., Philadelphia, Pa.
Watts Regulator Co., Lawrence, Mass.
Webster Electric Co., Racine, Wis.
Whittaker Controls, A Div. of Telecomputing Corp., Los Angeles, Calif.

VALVES, SADDLE

Anderson Metals Corp., Kansas City, Mo.
Beckett & Co., Inc., Thomas, Dallas, Tex.
Fairbanks Co., The, New York, N. Y.
Imperial Brass Mfg. Co., Chicago, Ill.
Madden Brass Products Co., Aurora, Ill.
Maid-O'-Mist, Inc., Chicago, Ill.
Walworth Co., New York, N. Y.

VALVES, SAFETY CLEANOUT

Petrometer Corp., Long Island City, N. Y.

VALVES, SAFETY, STEAM

American Car & Foundry Div. of ACF Industries, Inc., New York, N. Y.
Associated Valve & Engineering Co., North Wales, Pa.
Crane Co., Chicago, Ill.
Crosby Valve & Gage Co., Wrentham, Mass.
Farris Engineering Corp., Palisades Park, N. J.
Foster Engineering Co., Union, N. J.
Greenwood Valve Div. of Vernon Tool Co., Ltd., Alhambra, Calif.
Keckley Co., O. C., Skokie, Ill.
Kieley & Mueller, Inc., Middletown, N. Y.
Kunkle Valve Co., Ft. Wayne, Ind.
Longergan Co., J. E., Philadelphia, Pa.
Lunkenheimer Co., Cincinnati, O.
Manning, Maxwell & Moore, Inc., Stratford, Conn.
New York Air Valve Corp., Brooklyn, N. Y.
Patrol Valve Co., The, Cleveland, O.
Powell Co., Wm., The, Cincinnati, O.
Rockwood Sprinkler Co., Worcester, Mass.
Scott Valve Mfg. Co., Detroit, Mich.
Texstream Corp., Houston, Tex.
Trerice Co., H. O., Detroit, Mich.
Vapor Heating Corp., Chicago, Ill.

VALVES, SAMPLING

Alloy Steel Products Co., Linden, N. J. (stainless steel)
Cooper Alloy Corp., Hillside, N. J.
Dahl, G. W., Bristol, R. I.
Greenwood Valve Div. of Vernon Tool Co., Ltd., Alhambra, Calif.
Jamesbury Corp., Worcester, Mass.
Jordan Corp., Div. of OPW Corp., Cincinnati, O.
Powell Co., William, Cincinnati, O.
Rockwell Mfg. Co., Meter & Valve Div., Pittsburgh, Pa.
Walworth Co., New York, N. Y.

VALVES, SLIDE

Chapman Valve Mfg. Co., The, Indian Orchard, Springfield, Mass.
Fabri-Valve Co. of America, Portland, Ore.
General Ceramics Corp., Keasbey, N. J. (chemical stoneware)
General Controls Co., Glendale, Calif.
Jenkins Bros., New York, N. Y.
Jordan Corp., Div. of OPW Corp., Cincinnati, O.
Rockwell Co., W. S., Fairfield, Conn.
Walworth Co., New York, N. Y.
Webster Electric Co., Racine, Wis.
Whittaker Controls, A Div. of Telecomputing Corp., Los Angeles, Calif.

VALVES, SOLDER JOINT

American Brass Co., Waterbury, Conn.
Chase Brass & Copper Co., Waterbury, Conn.
Cleveland Brass Mfg. Co., The, Kinsman, O.
Crane Co., Chicago, Ill.
Dahl, G. W., Bristol, R. I.
Darling Valve & Mfg. Co., Williamsport, Pa.
Fairbanks Co., The, New York, N. Y.
Grinnell Co., Inc., Providence, R. I.
Hammond Valve Corp., Hammond, Ind.
Jenkins Bros., New York., N. Y.
Kennedy Valve Mfg. Co., The, Elmira, N. Y.
Kerotest Mfg. Co., Pittsburgh, Pa.
Lunkenheimer Co., Cincinnati, O.
Mueller Brass Co., Port Huron, Mich.

Nibco, Inc., Elkhart, Ind.
Ohio Brass Co., Mansfield, O.
Ohio Injector Co., Wadsworth, O.
Pittsburgh Valve Co., Reedsville, W. Va
Powell Co., Wm., The, Cincinnati, O.
R-P & C Valve Div., American Chain & Cable Co., Inc., Reading, Pa.
Scott Valve Mfg. Co., Detroit, Mich.
Superior Valve and Fittings Co., Pittsburgh, Pa.
Valco, Inc., Cincinnati, O.
Walworth Co., New York, N. Y. (Silver brazed)

VALVES, SOLENOID

A-P Controls Div., Controls Co. of America, Milwaukee, Wis.
Airmatic Valve, Inc., Cleveland, O.
Alco Valve Co., St. Louis, Mo.
Allen-Bradley Co., Milwaukee, Wis.
Allied Control Co., Inc., New York, N. Y.
Associated Valve & Engineering Co., North Wales, Pa.
Atkomatic Valve Co., Inc., Indianapolis, Ind.
Automatic Switch Co., Florham Park, N. J.
Barksdale Valves, Los Angeles, Calif.
Baso, Inc., Milwaukee, Wis.
Chatleff Valve & Mfg. Co., Austin, Tex.
Clark Controller Co., Cleveland, O.
Cla-Val Co., Newport Beach, Calif.
Davis Regulator Co., Chicago, Ill.
Detroit Controls Div. of American-Standard, Detroit, Mich.
Dole Valve Co., The, Morton Grove, Ill.
Eclipse Fuel Engineering Co., Rockford, Ill.
Electronics Corp. of America, Cambridge, Mass.
Erickson Specialty Co., Cohoes, N. Y.
Farris Flexible Valve Corp., Palisades Park, N. J.
General Controls Co., Glendale, Calif. and Skokie, Ill.
Golden Anderson Valve Specialty Co., Pittsburgh, Pa.
Gould Co., J. D., Indianapolis, Ind.
Granberg Corp., Oakland, Calif.
Grove Valve and Regulator Co., Oakland, Calif.
Hanna Engineering Wks., Chicago, Ill.
Hauck Mfg. Co., Brooklyn, N. Y.
Hays Mfg. Co., Erie, Pa.
Homestead Valve Mfg. Co., Coraopolis, Pa.
Hubbell Corp., Mundelein, Ill.
Hunt & Son, Inc., C. B., Salem, O.
Jackes-Evans Mfg. Co., Controls Div., St. Louis, Mo.
Johnson Corp., The, Three Rivers, Mich.
Keckley Co., O. C., Skokie, Ill.
Lammert & Mann Co., Chicago, Ill. (Gas safety shut-off)
Ledeen Mfg. Co., El Monte, Calif.
Magnatrol Valve Corp., Hawthorne, N. J.
Marsh Refrigeration Equipment Co., Affiliate Jas. P. Marsh Corp., Skokie, Ill.
Marsh Instrument Co., Skokie, Ill.
McDonnell & Miller, Inc., Chicago, Ill.
McQuay-Norris Mfg. Co., St. Louis, Mo.
Mercoid Corp., The, Chicago, Ill.
Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.
Minneapolis-Honeywell Regulator Co., Industrial Div., Philadelphia
Nicholson & Co., W. H., Wilkes-Barre, Pa.
North American Mfg. Co., Cleveland, O.
Penn Controls, Inc., Goshen, Ind.
R.K.L. Valve & Mfg. Co., Maple Shade, N. J.
Ranco Inc., Columbus, O.
Refrigerating Specialties Co., Chicago, Ill.
Rockwell Co., W. S., Fairfield, Conn.
Rockwell Mfg. Co., Meter & Valve Div., Pittsburgh, Pa.
Ruggles-Klingemann Mfg. Co., Boston, Mass.
Sarco Co., Inc., New York, N. Y.
Sarcotherm Controls, Inc., New York, N. Y.
Scientific Instrument Co., Detroit, Mich.
Security Valves Corp., Glendale, Calif.
Skinner Electric Valve Div., The Skinner Chuck Co., New Britain, Conn.
Spence Engineering Co., Inc., Walden, N. Y.
Sporlan Valve Co., St. Louis, Mo.
Squires Co., C. E., The, Cleveland, O.
Trerice Co., H. O., Detroit, Mich.
Valcor Engineering Corp., Kenilworth, N. J.
Vapor Heating Corp., Chicago, Ill.
Watkins Co., J. E., Maywood, Ill.
Webster Electric Co., Racine, Wis.
White-Rodgers Co., St. Louis, Mo.
Whittaker Controls, A Div. of Telecomputing Corp., Los Angeles, Calif.

VALVES, STEAM-JACKETED

Alco Products, Inc., Schenectady, N. Y.
Alloy Steel Products Co., Linden, N. J. (Stainless steel)
Associated Valve & Engineering Co., North Wales, Pa.
Darling Valve & Mfg. Co., Williamsport, Pa.
Devine Mfg. Co., Inc., J. P., Pittsburgh, Pa.
Everlasting Valve Co., Jersey City, N. J.
Gato Valve Co., Pittsburgh, Pa.
Hammel-Dahl, Div. of General Controls Co., Warwick, R. I.
Hetherington & Berner, Inc., Indianapolis, Ind.
Homestead Valve Mfg. Co., Coraopolis, Pa.
Nuclear & Power Equipment Corp., S. San Francisco, Calif.
Parks-Cramer Co., Fitchburg, Mass.
Penberthy Mfg. Co., Div. of Buffalo Eclipse Corp., Detroit, Mich.
Powell Co., Wm., The, Cincinnati, O.
Rockwell Mfg. Co., Meter & Valve Div., Pittsburgh, Pa.
Stockham Valves & Fittings, Birmingham, Ala.
Walworth Co., New York, N. Y.
Wedgeplug Valve Co., Div. of Stockham Valves & Fittings, Birmingham, Ala.

VALVES, SWITCHING, HEAT PUMP

Chatleff Valve & Mfg. Co., Austin, Tex.
Ranco Inc., Columbus, O.

VALVES, 2, 3 AND 4 WAY

Airmatic Valve, Inc., Cleveland, O.
Alco Valve Co., St. Louis, Mo.
American Car & Foundry Div. of ACF Industries, Inc., New York, N. Y.
Anderson Brass Co., Detroit, Mich.
Anderson Metals Corp., Kansas City, Mo.
Aqua Matic, Inc., Rockford, Ill.
Atkomatic Valve Co., Inc., Indianapolis, Ind.
Automatic Switch Co., Florham Park, N. J.
Automatic Timing & Controls, Inc., King of Prussia, Pa.
Barber-Colman Co., Rockford, Ill.
Barksdale Valves, Los Angeles, Calif.
Barworth, Inc., Springfield, N. J.
Black, Sivalls & Bryson, Inc., Kansas City, Mo.
Bordo Co., Inc., L. J., Glenside, Pa. (plug)
Bristol Co., The, Waterbury, Conn.
Cash Co., A. W., Decatur, Ill.
Cash Valve Mfg. Corp., A. W., Decatur, Ill.
Chatleff Valve & Mfg. Co., Austin, Tex.
Clark Controller Co., Cleveland, O.
Cla-Val Co., Newport Beach, Calif.
Commercial Shearing & Stamping Co., Youngstown, O.
Cooper Alloy Corp., Hillside, N. J.
Crane Co., Chicago, Ill.
Dahl, G. W., Bristol, R. I.
Davis Engineering Corp., Elizabeth, N. J.
Davis Regulator Co., Chicago, Ill.
Detroit Controls Div. of American-Standard, Detroit, Mich.
De Zurik Corp., Sartell, Minn.
Duriron Co., Inc., The, Dayton, O. (acid resisting)
Fulton Sylphon Div., Robertshaw-Fulton Controls Co., Knoxville, Tenn.
Gardner-Denver Co., Quincy, Ill.
General Controls Co., Glendale, Calif. and Skokie, Ill.
Hammel-Dahl, Div. of General Controls Co., Warwick, R. I.
Hanna Engineering Wks., Chicago, Ill.
Henry Valve Co., Melrose Park, Ill.
Holby Tempering Valve Co., Inc., New York, N. Y.
Homestead Valve Mfg. Co., Coraopolis, Pa.
Hunt & Son, Inc., C. B., Salem, O.
Imperial Brass Mfg. Co., Chicago, Ill.
Johnson Service Co., Milwaukee Wis.
Kerotest Mfg. Co., Pittsburgh, Pa.
Kieley & Mueller, Inc., Middletown, N. Y.
Ladish Co., Cudahy, Wis.
Ledeen Mfg. Co., El Monte, Calif.
Lunkenheimer Co., Cincinnati, O.
Luzerne Rubber Co., Trenton, N. J. (Hard rubber)
Marsh Valve Co., Dunkirk, N. Y.
McDonald Mfg. Co., A. Y., Dubuque, Ia.
Mercoid Corp., Chicago, Ill.
Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.
Mueller Brass Co., Port Huron, Mich.
Nicholson & Co., W. H., Wilkes-Barre, Pa.
Ohio Brass Co., Mansfield, O.
Penn Controls, Inc., Goshen, Ind.
Permutit Co., Div. of Pfaudler Permutit, Inc., New York, N. Y.
Powell Co., Wm., Cincinnati, O.
Ranco Inc., Columbus, O.
Republic Mfg. Co., Cleveland, O.
Rockwell Co., W. S., Fairfield, Conn.
Rockwell Mfg. Co., Meter and Valve Div., Pittsburgh, Pa.
Ruggles-Klingemann Mfg. Co., Boston, Mass.
Sarcotherm Controls, Inc., New York, N. Y.
Schutte and Koerting Co., Cornwells Heights, Bucks County, Pa.
Seamon Snap Valve Co., Westboro, Mass.
Semet-Solvay Engineering Div., Allied Chemicals Corp., New York, N. Y.
Skinner Electric Valve Div., The Skinner Chuck Co., New Britain, Conn.
Smith Co., S. Morgan, York, Pa.
Superior Valve & Fittings Co., Pittsburgh, Pa.
Taylor Instrument Companies, Rochester, N. Y.
Valcor Engineering Corp., Kenilworth, N. J.
Wach Co., E. H., The, Chicago, Ill.
Walworth Co., New York, N. Y. (Lubricated plug valves)
Warren Engineering Co., Broadway, N. J.
Weatherhead Co., The, Ft. Wayne Div., Ft. Wayne, Ind.
Webster Electric Co., Racine, Wis.
Whittaker Controls, A Div. of Telecomputing Corp., Los Angeles, Calif.

VALVES, WATER GAGE

Associated Valve & Engineering Co., North Wales, Pa.
Cooper Alloy Corp., Hillside, N. J.
Crane Co., Chicago, Ill.
Defender Instrument & Regulator Co., Boody, Ill.
Edward Valves, Inc., East Chicago, Ind.
Ernst Water Column & Gauge Co., Livingston, N. J.
Henry Valve Co., Melrose Park, Ill.
Keckley Co., O. C., Skokie, Ill.
Longergan Co., J. E., Philadelphia, Pa.
Lunkenheimer Co., Cincinnati, O.
Penberthy Mfg. Co., Div. of Buffalo Eclipse Corp., Detroit, Mich.
Reliance Gauge Column Co., Cleveland, O.

VANES, DUCT TURNING, PREFABRICATED

Anemostat Corp. of America, New York, N. Y. (Equalizing deflectors)
Barber-Colman Co., Rockford, Ill.
Cain Mfg. Co., Birmingham, Ala.
Duro-Dyne Corp., Farmingdale, L. I., N. Y.
Elgen Mfg. Corp., Long Island City, N. Y.
Register & Grille Mfg. Co., Inc., Brooklyn, N. Y.
Titus Mfg. Corp., Waterloo, Ia.
Tuttle & Bailey, Div. of Allied Thermal Corp., New Britain, Conn.
United Sheet Metal Co., Inc., Columbus, O.
Waterloo Register Co., Inc., Waterloo, Iowa

VAPOR BARRIERS

See Barriers, Vapor

VAPOR HEATING SYSTEMS

See Systems, Heating, Vapor

VAPORIZERS FOR PROPANE-BUTANE

Buxton Mfg. Co., Dover, N. J.
Davis Engineering Corp., Elizabeth, N. J.
Mitchell Co., John E., Dallas, Tex.
Mutual Liquid Gas & Equipment Co., Gardena, Calif.
Ransome Torch & Burner Co., Emeryville, Calif.

VARIABLE SPEED DRIVES

See Changers, Speed, Hydraulic Coupling; Changers, Speed, Mechanical; Reducers, Speed; Pulleys and Sheaves, for Belt Drives

VARIABLE SPEED PULLEYS

See Changers, Speed, Mechanical

V-BELT DRIVES

See Drives, V-Belt

VELOCITY, REGULATORS

See Regulators, Air Velocity

VENT FLUE CAPS

See Caps, Vent Flue

VENTILATING HOSE

See Ducts and Duct Fittings, Prefabricated, Flexible and Non-Flexible, Metallic and Non-Metallic; Hose, Flexible, Metal and Fittings

VENTILATION HEATERS

See Surface, Finned, Heating; Ventilators, Roof, Fan; Ventilators, Unit

VENTILATORS, MUSHROOM

Aladdin Heating Corp., San Leandro, Calif.
Atmos Corp., Chicago, Ill.
Burt Mfg. Co., Akron, O.
Carnes Corp., Verona, Wis.
Chicago Blower Corp., Franklin Park, Ill.
Cook Co., Loren, Berea, O.
De Bothezat Fans Div., American Machine & Metals, Inc., East Moline, Ill.
Detroit Blower Corp., Franklin Park, Ill.
Jenn-Air Products Co., Indianapolis, Ind.
Knight, Maurice A., Akron, O. (Stoneware)
Knowles Mushroom Ventilator Co., Upper Montclair, N. J.
Martin Fan & Blower Co., Chicago, Ill.
Muckle Mfg. Co., Owatonna, Minn.
Peerless Electric Co., Warren, O.
Penn Ventilator Co., Philadelphia, Pa.
Ritter Pattern & Casting Co., Inc., New York, N. Y.
Robinson Clay Product Co., Akron, O.
United Sheet Metal Co., Inc., Columbus, O.
Uno Ventilator Co., Malden, Mass.
Van Noorden Co., E., Boston, Mass.

VENTILATORS, ROOF, FAN

Aerovent Fan Co., Inc., Piqua, O.
Air Conditioning Engineering Co., Cambridge, Mass.
Air Controls, Inc., Div. of Cleveland Heater Co., Cleveland, O.
Airjet Ventilator Co., San Clemente, Calif.
Air & Refrigeration Corp., New York, N. Y.
Aladdin Heating Corp., San Leandro, Calif.
Allen Cooler & Ventilator, Inc., Rochester, Mich.
American Blower Div. of American-Standard, Detroit, Mich.
American Coolair Corp., Jacksonville, Fla.
American Steel Band Co., Pittsburgh, Pa.
Ammerman Co., Inc., Stillwater, Minn.
Arden Airoflo Engineering, Inc., El Monte, Calif.
Arex Co., Chicago, Ill.
Atmos Corp., Chicago, Ill.
Bar-Brook Mfg. Co., Inc., Shreveport, La.
Bertram Co., Harvey P., The, Cincinnati, O.
Breidert Co., G. C., San Fernando, Calif.
Brookside Corp., McCordsville, Ind.
Buffalo Forge Co., Buffalo, N. Y.
Burt Mfg. Co., Akron, O.
Carnes Corp., Verona, Wis.
Century Fan & Ventilator Co., Inc., Stamford, Conn.
Chicago Blower Corp., Franklin Park, Ill.
Clarage Fan Co., Kalamazoo, Mich.
Clay Equipment Corp., Cedar Falls, Ia.
Colt Ventilation of America, Inc., Los Angeles, Calif.
Commercialaire Corp. of America, Brooklyn, N. Y.
Consolidated General Products, Inc., Houston, Tex.
Cook Co., Loren, Berea, O.
Dana Fan & Blower Corp., Cincinnati, O.
Davidson Hyduty Roof Fan Co., Newton, Mass.
De Bothezat Fans Div., American Machine & Metals, Inc., East Moline, Ill.
Detroit Blower Corp., Franklin Park, Ill.
Diehl Mfg. Co., Finderne Plant, Somerville, N. J.
Donaldson Div., Marvin D. Shafer Co., Inc., Los Angeles, Calif.
Dryer Electric Corp., Fan Div., Brooklyn, N. Y.
Electrovent Fan & Mfg. Co., Chicago, Ill.
Empire Ventilation Equipment Co., Long Island City, N. Y.
Gallaher Co., The, Omaha, Neb.
Genie-Air, Los Angeles, Calif.
Greenheck Fan & Ventilator Corp., Schofield, Wis.
Hamilton Fan & Blower Co., Inc., Cincinnati, O.
Hartzell Propeller Fan Co., Piqua, O.

Hayes Furnace Mfg. & Supply Co., Los Angeles, Calif.
Heating Assurance, Inc., Spokane, Wash.
Hill Co., Francis, Cleveland, O.
Hirschman-Pohle Co., Inc., LeRoy, N. Y.
Hudson Mfg. Co., H. D., Chicago, Ill.
Hunter Div., Robbins & Myers, Inc., Memphis, Tenn.
Ilg Electric Ventilating Co., Chicago, Ill.
International Engineering, Inc., Dayton, O.
Iona Ventilator Co., Inc., Philadelphia, Pa.
Iron Lung Ventilator Co., Cleveland, O.
Jeffrey Mfg. Co., Columbus, O.
Jenn-Air Products Co., Indianapolis, Ind.
Jordan & Co., Inc., Paul R., Indianapolis, Ind.
King Co. of Owatonna, The, Owatonna, Minn.
Kody Blower Co., Trenton, N. J.
Lennox Industries Inc., Des Moines, Ia.
M & E Mfg. Co., Indianapolis, Ind.
Martin Fan & Blower Co., Chicago, Ill.
Midwest Airmoving Corp., Willoughby, O.
Moore Co., The, Marceline, Mo.
Mountain States Equipment Co., Denver, Colo.
Muckle Mfg. Co., Owatonna, Minn.
New York Blower Co., Chicago, Ill.
Newcomb-Detroit Co., Detroit, Mich.
Octagon Ventilator Co., Chicago, Ill.
Peerless Electric Co., Warren, O.
Penn Ventilator Co., Philadelphia, Pa.
Power Line Fan Co., Inc., Subsidiary of Chelsea Products, Inc., Plainfield, N. J.
Propellair Div., Robbins & Myers Inc., Springfield, O.
Robertson Co., H. H., Pittsburgh, Pa.
Sargent Enginairing Co., Cleveland, O.
South Bend Air Products, Inc., South Bend, Ind.
Swartwout Co., The, Cleveland, O.
Trade-Wind Motorfans, Inc., Pico Rivera, Calif.
Trane Co., The, La Crosse, Wis. (available with heating coils)
Triangle Engineering Co., Houston, Tex.
Truflo Fan Co., Harmony, Pa.
Uno Ventilator Co., Malden, Mass.
Van Noorden Co., E., Boston, Mass.
Vinco Products, Inc., Glastonbury, Conn.
Waverly Heating Supply Co., Beverly, Mass.
Western Engineering & Mfg. Co., Venice, Calif.
Wind-Way Fan & Ventilator Co., New Orleans, La.
Wing Mfg. Co., L. J., Div. of Aero Supply Mfg. Co., Inc., Linden, N. J.

VENTILATORS, ROOF, GRAVITY

Accurate Sheet Metal & Mfg. Works, Chicago.
Acme Engineering & Mfg. Corp., Muskogee, Okla.
Air Control Products, Inc., Coopersville, Mich.
Air Devices, Inc., New York, N. Y.
Airjet Ventilator Co., San Clemente, Calif.
Allen Cooler & Ventilator, Inc., Rochester, Mich.
American Foundry & Furnace Co., Bloomington, Ill.
American Metal Works, Inc., New Orleans.
American Steel Band Co., Pittsburgh, Pa.
Ammerman Co., Inc., Stillwater, Minn.
Arex Co., Chicago, Ill.
Atmos Corp., Chicago, Ill.
Breidert Co., G. C., San Fernando, Calif.
Brisk Metal Products, New York, N. Y.
Brookside Corp., McCordsville, Ind.
Burt Mfg. Co., Akron, O.
Century Fan & Ventilator Co., Inc., Stamford, Conn.
Clay Equipment Corp., Cedar Falls, Ia.
Colt Ventilation of America, Inc., Los Angeles, Calif.
Donaldson Div., Marvin D. Shafer Co., Inc., Los Angeles, Calif.
Empire Ventilation Equipment Co., Long Island City, N. Y.
Greenheck Fan & Ventilator Corp., Schofield, Wis.
Hirschman-Pohle Co., Inc., LeRoy, N. Y.
Hudson Mfg. Co., H. D., Chicago, Ill.
Inland Steel Products Co., Milwaukee, Wis.
International Metal Products, Phoenix, Ariz.
Iona Ventilator Co., Inc., Philadelphia, Pa.
Iwan Brothers, South Bend, Ind.
Jordan & Co., Inc., Paul R., Indianapolis, Ind.
Klauer Mfg. Co., Dubuque, Ia.
La Crosse Steel Roofing & Corrugating Co., La Crosse, Wis.
Lennox Industries Inc., Des Moines, Ia.
Leslie Welding Co., Inc., Chicago, Ill.
Levow, David, Brooklyn, N. Y.
Maple City Furnace Co., Monmouth, Ill.
Moeschl-Edwards Corrugating Co., Inc., The, Cincinnati, O.
Octagon Ventilator Co., Chicago, Ill.
Penn Ventilator Co., Philadelphia, Pa.
Plasteel Products Corp., Washington, Pa.
Puhl & Hepper Mfg. Co., Inc., St. Louis, Mo.
Robertson Co., H. H., Pittsburgh, Pa.
St. Paul Corrugating Co., St. Paul, Minn.
Souther Iron Co., E. E., St. Louis, Mo.
Swartwout Co., The, Cleveland, O.
Tierney Rotor Ventilator Co., Minneapolis, Minn.
Triangle Engineering Co., Houston, Tex.
United Sheet Metal Co., Inc., Columbus, O.
Uno Ventilator Co., Malden, Mass.
Van Noorden Co., E., Boston, Mass.
Vinco Products, Inc., Glastonbury, Conn.
Walker Jamar Co., Duluth, Minn.
Walker Mfg. & Sales Co., St. Joseph, Mo.
Warner Ventilator Co., La Grange, Ind.
Waverly Heating Supply Co., Beverly, Mass.
Western Engineering & Mfg. Co., Venice, Calif.

VENTILATORS, ROOF, WITH FUSIBLE LINKS, FOR VENTING PRODUCTS OF COMBUSTION

Airjet Ventilator Co., San Clemente, Calif.
American Metal Works, Inc., New Orleans.
Atmos Corp., Chicago, Ill.
Bertram Co., The Harvey P., Cincinnati, O.
Burt Mfg. Co., Akron, O.
Chicago Blower Corp., Franklin Park, Ill.
Colt Ventilation Co. of America, Inc., Los Angeles, Calif.
DeBothezat Fans Div., American Machine & Metals, Inc., East Moline, Ill.
Detroit Blower Corp., Franklin Park, Ill.
Iona Ventilator Co., Inc., Philadelphia, Pa.
Jordan & Co., Inc., Paul R., Indianapolis, Ind.
Kody Blower Co., Trenton, N. J.
Mahon Co., R. C., The, Detroit, Mich.
Propellair Div., Robbins & Myers, Inc., Springfield, O.
Robertson Co., H. H., Pittsburgh, Pa.
Swartwout Co., The, Cleveland, O.
Van Noorden Co., E., Boston, Mass.

VENTILATORS, UNIT, ELECTRIC HEATING ELEMENT

Herman Nelson Products, American Air Filter Co., Inc., Louisville, Ky.
Nesbitt, Inc., John J., Philadelphia, Pa.
Vulcan Radiator Co., Hartford, Conn.
Wesix Electric Heater Co., San Francisco.
Wiegand Co., Edwin L., Pittsburgh, Pa.

VENTILATORS, UNIT, GAS

Gannon Heating & Ventilating Div., Ward LaFrance Truck Corp., Elmira, N. Y.
Herman Nelson Products, American Air Filter Co., Inc., Louisville, Ky.
Lennox Industries Inc., Des Moines, Ia.
Norman Products Co., Inc., Columbus, O.

VENTILATORS, UNIT, HOT WATER AND STEAM

American Blower Div. of American-Standard, Detroit, Mich.
Blazer & Son, M., Passaic, N. J.
Buffalo Forge Co., Buffalo, N. Y.
Gannon Co., Russell R., Cincinnati, O.
Herman Nelson Products, American Air Filter Co., Inc., Louisville, Ky.
Kody Blower Co., Trenton, N. J.
Nesbitt, Inc., John J., Philadelphia, Pa.
Rittling Corp., The, Buffalo, N. Y.
Schemenauer Mfg. Corp., Holland, O.
Trane Co., The, LaCrosse, Wis.
Valveblower Co. of Calif., Santa Fe Springs, Calif.
Vulcan Radiator Co., Hartford, Conn.
Wood Mfg. Co., A. R., Luverne, Minn.

VENTILATORS, WALL, FAN

American Coolair Corp., Jacksonville, Fla.
Ammerman Co., Inc., Stillwater, Minn.
Barnebey-Cheney Co., Columbus, O. (with activated charcoal)
Bertram Co., Harvey P., The, Cincinnati, O.
Brookside Corp., McCordsville, Ind.
Buffalo Forge Co., Buffalo, N. Y.
Colt Ventilation Co. of America, Inc., Los Angeles, Calif.
Consolidated General Products, Inc., Houston, Tex.
Cook Co., Loren, Berea, O.
Diehl Mfg. Co., Finderne Plant, Somerville, N. J.
Emerson Electric Mfg. Co., St. Louis, Mo.
Exit-Aire Ventilating Co., Pacoima, Calif.
Gallaher Co., The, Omaha, Nebr.
Hudson Mfg. Co., H. D., Chicago, Ill.
Hunter Div., Robbins & Myers, Inc., Memphis, Tenn.
Ilg Electric Ventilating Co., Chicago, Ill.
Jenn-Air Products Co., Indianapolis, Ind.
Kody Blower Co., Trenton, N. J.
Lennox Industries Inc., Des Moines, Ia.
Martin Fan & Blower Co., Chicago, Ill.
NuTone, Inc., Cincinnati, O.
Phelps Mfg. Co., Little Rock, Ark.
Power Line Fan Co., Inc., Subsid. of Chelsea Products, Inc., Plainfield, N. J.
Triangle Engineering Co., Houston, Tex.
Whirlwind Mfg. Co., Houston, Tex.

VENTS, RELIEF, AND INTAKE, AIR

Ammerman Co., Inc., Stillwater, Minn.
Bertram Co., The Harvey P., Cincinnati, O.
Brookside Corp., McCordsville, Ind.
Carnes Corp., Verona, Wis.
Cook Co., Loren, Berea, O.
Exit-Aire Ventilating Co., Pacoima, Calif.
Ilg Electric Ventilating Co., Chicago, Ill.
Jenn-Air Products Co., Indianapolis, Ind.
Jordan & Co., Inc., Paul R., Indianapolis.
Kody Blower Co., Trenton, N. J.
Leslie Welding Co., Inc., Chicago, Ill.
Muckle Mfg. Co., Owatonna, Minn.
Senrac Industries, Madison, Wis.
Somers Corp., Detroit, Mich.
Swartwout Co., The, Cleveland, O.
Universal Valve Co., Elizabeth, N. J.
Waterloo Register Co., Waterloo, Ia.

VIBRATION DETECTORS

See Detectors, Vibration

VIBRATION ISOLATORS

See Absorbers, Vibration; Bases, Vibration Isolating, Pad Type; Bases, Vibration Isolating, Spring Type; Hose, Flexible, Metal and Fittings

VISCOSIMETERS

American Instrument Co., Inc., Silver Spring, Md.
Bendix Aviation Corp., Cincinnati, O.
Brabender Corp., Rochelle Park, N. J. (recording)
Bristol Co., The, Waterbury, Conn.
Brookfield Engineering Laboratories, Inc., Stoughton, Mass.
Drage Products, Inc., Union City, N. J.
Fischer & Porter Co., Hatboro, Pa.
General Electric Co., Apparatus Sales Div., Schenectady, N. Y.
Humboldt Mfg. Co., Chicago, Ill.
Scientific Instrument Co., Detroit, Mich.
Thomas Co., Arthur H., Philadelphia, Pa.
Thomas Industries, Inc., Electric Sprayit Div., Sheboygan, Wis.
Tipptronics, Inc., Chagrin Falls, O.
Will Corp., Rochester, N. Y.

VISES, PIPE

American Pipe Tool Co., Chicago, Ill.
Armstrong-Bridgeport Tool Mfg. Corp., Belleville, N. J.
Armstrong Bros. Tool Co., Chicago, Ill.
Beaver Pipe Tools, Inc., Warren, O. (Sawing—for tubing)
Billings & Spencer Co., Hartford, Conn.
Columbian Vise & Mfg. Co., Cleveland, O.
Desmond-Stephan Mfg. Co., Urbana, O.
Erie Tool Wks., Erie, Pa.
Fine Products Co., Berwyn, Ill.

Hollands Mfg. Co., Erie, Pa.
Nye Tool Co., Chicago, Ill.
Reed Mfg. Co., Erie, Pa.
Ridge Tool Co., Elyria, O.
Sae Tool Mfg. Co., St. Louis, Mo.
Springload Mfg. Corp., Seattle, Wash.
Talon Tools, Inc., North Arlington, N. J.
Toledo Pipe Threading Machine Co., Toledo, O.
Trimont Mfg. Co., Div. of St. Pierre Chain Corp., Worcester, Mass.
Vanderman Mfg. Co., Willimantic, Conn.
Western Wire Products Co., St. Louis, Mo.
Williams & Co., J. H., Buffalo, N. Y.
Yost Mfg. Co., Cambridge Springs, Pa.

VISES, SHEET METAL WORKERS'

Columbian Vise & Mfg. Co., Cleveland, O.
Desmond-Stephan Mfg. Co., Urbana, O.
Milton Equipment Co., Philadelphia, Pa.
Yost Mfg. Co., Cambridge Springs, Pa.

VOLTMETERS

Columbia Electric Mfg Co., Cleveland, O.
General Electric Co., Apparatus Sales Div., Schenectady, N. Y.
Pyramid Instrument Corp., Lynbrook, Long Island, N. Y.
Sangamo Electric Co., Springfield, Ill.

WARM AIR FURNACES

See Furnaces, Warm Air

WASHERS, AIR

Air & Refrigeration Corp., New York, N. Y.
Air-Cooling Engineering Co., **Evanston, Ill.**
Airfan Engineering Co., Los Angeles, Calif.
Alton Mfg. Co., Dallas, Tex.
American Blower Div. of American-Standard, Detroit, Mich.
Automotive Rubber Co., Inc., Detroit, Mich.
Bahnson Co., Winston-Salem, N. C.
Bayley Blower Co., Milwaukee, Wis.
Buensod-Stacey, Inc., New York, N. Y.
Buffalo Forge Co., Buffalo, N. Y.
Carrier Corp., Syracuse, N. Y.
Centri-Spray Corp., Livonia, Mich. (Wet type)
Century Engineering Corp., Cedar Rapids, Ia.
Clarage Fan Co., Kalamazoo, Mich.
Comfort Products Inc., Dallas, Tex.
Continental Air Filters, Inc., Louisville, Ky.
DeVilbiss Co., The, Toledo, O.
DeVilbiss Metal Fabricators Co., Detroit, Mich.
Donaldson Div., Marvin D. Shafer Co., Inc., Los Angeles, Calif.
Drying Systems Co., Chicago, Ill.
Ducon Co., Inc., The, Mineola, N. Y.
Johnson-March Corp., Philadelphia, Pa.
Mahon Co., R. C., The, Detroit, Mich.
Marlo Coil Co., St. Louis, Mo.
Master Fan Corp., Los Angeles, Calif.
Mountain States Equipment Co., Denver, Colo.
Parks-Cramer Co., Fitchburg, Mass.
Schmieg Industries Inc., Detroit, Mich.
Schneible Co., Claude B., Detroit, Mich.
Spray Engineering Co., Burlington, Mass.
Surface Combustion Corp., Toledo, O.
Trane Co., The, LaCrosse, Wis.
Utility Appliance Corp., Los Angeles, Calif.
Western Blower Co., Seattle, Wash.
York Corp., Subsidiary of Borg-Warner Corp., York, Pa.

WASHERS, FUME

Automotive Rubber Co., Inc., Detroit, Mich.
Buffalo Forge Co., Buffalo, N. Y.
Centri-Spray Corp., Livonia, Mich. (wet type)
Ducon Co., Inc., The, Mineola, N. Y.
DuVerre, Inc., Buffalo, N. Y. (plastic)
General Ceramics Corp., Keasbey, N. J. (plastic & ceramic)
Heil Process Equipment Corp., Cleveland, O.
Johnson-March Corp., Philadelphia, Pa.
Knight Maurice A., Akron, Ohio (wet type)
Mahon Co., R. C., The, Detroit, Mich.
Master Fan Corp., Los Angeles, Calif.
Oxy Catalyst, Inc., Wayne, Pa.
Peabody Engineering Corp., New York, N. Y.
Schmieg Industries, Inc., Detroit, Mich.
Schneible Co., Claude B., Detroit, Mich.
Yerzley & Co., F., Newark, N. J.

WATER CHILLERS

See Chillers, Water, for Air Conditioning and Refrigeration, Compressors, Refrigerating, Combined with Condenser, Water Chiller, Piping Connections, and Controls

WATER DISTRIBUTORS FOR CONDENSERS

See Distributors, Water, for Condensers

WATER HAMMER ELIMINATORS

See Absorbers, Shock, Liquid

WATER RAMS FOR CLEANING OUT PIPE LINES

See Rams, Water

WATER STERILIZER, ULTRAVIOLET

See Units, Sterilizing, Water

WATER TREATMENT

See Treatment, Water; Devices, Electrolytic, for Preventing Corrosion

WATTMETERS

General Electric Co., Apparatus Sales Div., Schenectady, N. Y.
Sangamo Electric Co., Springfield, Ill.
Westinghouse Electric Corp., Pittsburgh, Pa.
Weston Instruments, Div. of Daystrom, Inc., Newark, N. J.

WELD TESTING MACHINES

See Machines, Testing, Weld

WELDERS, ARC

Air Reduction Sales Co., A Div. of Air Reduction Co., Inc., New York, N. Y.
Allied Weld-Craft, Inc., Indianapolis, Ind.
Borm Mfg. Co., Elgin, Ill.
Burdett Oxygen Co. of Calif., Huntington Park, Calif.
Electric Arc, Inc., Newark, N. J.
Ergolyte Mfg. Co., Philadelphia, Pa.
Eutectic Welding Alloys Corp., Flushing, N. Y.
Fern, Ralph, Scranton, Pa.
Hammett Electric Mfg. Co., Kansas City, Mo.
Harnischfeger Corp., Milwaukee, Wis.
Hobart Bros. Co., Troy, O.
Lincoln Electric Co., Cleveland, O.
Linde Co., Div. of Union Carbide Corp., New York, N. Y. (Inert gas-shielded)
Liquid Carbonic Div. of General Dynamics Corp., Chicago, Ill.
Marquette Mfg. Co., Inc., Minneapolis, Minn.
Metal & Thermit Corp., Rahway, N. J.
Mid-States Welder Mfg. Co., Chicago, Ill.
Miller Electric Mfg. Co., Inc., Appleton, Wis.
National Cylinder Gas Div. of Chemetron Corp., Chicago, Ill.
Niagara Machine & Tool Wks., Buffalo, N. Y.
Peer, Inc., Benton Harbor, Mich.
Precision Welder Mfg. Co., Chicago, Ill.
Sight Feed Generator Co., West Alexandria, O.
Smith Corp., A. O., Milwaukee, Wis.
Trindl Products, Ltd., Chicago, Ill.
Tweco Products Inc., Wichita, Kan. (Cable connectors, electrode holders and accessories and welding cable)
United Specialties, Inc., El Dorado, Ark. (welding cable reel)
Welding Apparatus Co., Chicago, Ill.
Weldit, Inc., Detroit, Mich.
Westinghouse Electric Corp., Buffalo, N. Y.
Westinghouse Electric Corp., Pittsburgh, Pa.

WELDERS, FOR PLASTIC PIPE OR PLASTIC SHEET

American Agile Corp., Bedford, O.
Argo Plastic Products, Cleveland, O.
Industrial Plastic Fabricators, Norwood, Mass.
Laramy Products Co., Hingham, Mass.
Saran Lined Pipe Co., Ferndale, Mich. (electric & acetylene types)
Seelye Craftsmen, The, Minneapolis, Minn.

WELDERS, SPOT

Acme Electric Welder Co., Los Angeles, Calif.
Acro Welder Mfg. Co., Milwaukee, Wis.
Allied Weld-Craft, Inc., Indianapolis, Ind.
Alphil Spot Welder Mfg. Corp., Brooklyn, N. Y.
Delta Welder Corp., Detroit, Mich.
Duro-Dyne Corp., Farmingdale, L. I., N. Y. (portable)
Eisler Engineering Co., Inc., Newark, N. J.
Electric Arc, Inc., Newark, N. J.
Fern, Ralph, Scranton, Pa.
Hammett Electric Mfg. Co., Kansas City, Mo.
Linde Co., Div of Union Carbide Corp., New York, N. Y. (Inert gas-shielded arc)
Liquid Carbonic Div. of General Dynamics Corp., Chicago, Ill.
Mallory & Co., Inc., P. R., Indianapolis, Ind. (electrode holders)
Micro Products Co., Chicago, Ill.
Mid-States Welder Mfg. Co., Chicago, Ill.
Miller Electric Mfg. Co., Inc., Appleton, Wis.
Milton Equipment Co., Philadelphia, Pa.
National Cylinder Gas Div. of Chemetron Corp., Chicago, Ill.
Peck Co., Cecil C., Cleveland, O.
Peer, Inc., Benton Harbor, Mich.
Research Vacuum Supply Co., Chicago, Ill.
Rex Welder Co., Kansas City, Mo.
Sciaky Bros., Inc., Chicago, Ill.
Taylor-Winfield Corp., Warren, O.
Thomson Electric Welder Co., Lynn, Mass.
Universal Welder Corp., Cleveland, O.
Weldex, Inc., Detroit, Mich.
Weldit, Inc., Detroit, Mich.
Westinghouse Electric Corp., Pittsburgh, Pa.

WELDERS, STUD

Eisler Engineering Co., Inc., Newark, N. J.
Graham Manufacturing Co., Needham Hts., Mass.
Hammett Electric Mfg. Co., Kansas City, Mo.
Hobart Bros. Co., Troy, O.
KSM Products, Inc., Merchantville, N. J.
Nelson Stud Welding Div., Gregory Industries, Inc., Lorain, O.

WELDING AND CUTTING APPARATUS, OXY-ACETYLENE

Air Products, Inc., Allentown, Pa.
Air Reduction Sales Co., A Div. of Air Reduction Co., Inc., New York, N. Y.
Allied Weld-Craft, Inc., Indianapolis, Ind.
Arcos Corp., Philadelphia, Pa. (arc-oxygen)
Atlas Welding Accessories Inc., Ferndale, Mich. (Weld cleaning tools)
Dockson Corp., Detroit, Mich.
Eutectic Welding Alloys Corp., Flushing, N. Y.
Evans Machine Co., Inc., Baltimore, Md.
General Scientific Equipment Co., Philadelphia, Pa.
Goss Gas, Inc., Glenshaw, Pa.
Harris Calorific Co., The, Cleveland, O.
K-G Equipment Co., Allentown, Pa.
Lenco, Inc., Jackson, Mo.
Linde Co., Div of Union Carbide Corp., New York, N. Y.
Liquid Carbonic Div. of General Dynamics Corp., Chicago, Ill.
Marquette Mfg. Co., Inc., Minneapolis, Minn.
Modern Engineering Co., St. Louis, Mo.
National Cylinder Gas Div. of Chemetron Corp., Chicago, Ill.
Sight Feed Generator Co., West Alexandria, O. (portable and stationary acetylene generators)
Smith Welding Equipment Corp., Minneapolis, Minn.
United Specialties, Inc., El Dorado, Ark. (welding hose reel)
Vernon Tool Co., Ltd., Alhambra, Calif.
Victor Equipment Co., Welding Equipment Div., San Francisco, Calif.
Weldit, Inc., Detroit, Mich.

WELDING COMPOUNDS

See Compounds, Welding

WELDING FUME COLLECTORS

See Exhausters, Welding Fume

WELDING RINGS

See Rings, Backing, for Pipe Welding

WELLS, THERMOMETER

Airserco Mfg. Co., Inc., Pittsburgh, Pa.
Bristol Co., The, Waterbury, Conn.
Campbell Co., J. A., Long Beach, Calif.
Corning Glass Works, Corning, N. Y.
Engelhard, Inc., Charles, East Newark, N. J.
Foxboro Co., Foxboro, Mass.
General Ceramics Corp., Keasbey, N. J. (graphite)
H-B Instrument Co., Philadelphia, Pa.
Manning, Maxwell & Moore, Inc., Stratford, Conn.
Minneapolis-Honeywell Regulator Co., Industrial Div., Philadelphia, Pa.
Moeller Instrument Co., Richmond Hill, N. Y.
Pacific Transducer Corp., Los Angeles, Calif.
Palmer Thermometers, Inc., Cincinnati (Norwood), O.
Philadelphia Thermometer Co., Philadelphia.
Precision Thermometer & Instrument Co., Philadelphia, Pa.
Rochester Mfg. Co., Inc., Rochester, N. Y.
Taylor Instrument Companies, Rochester, N. Y.
Thermo Electric Co., Inc., Saddle Brook, N. J.
Trerice Co., H. O., Detroit, Mich.
Weksler Instruments Corp., Freeport, L. I., N. Y.

WHEELS, BLOWER

Air Controls, Inc., Div. of Cleveland Heater Co., Cleveland, O.
Airfan Engineering Co., Los Angeles, Calif.
Barry Blower Co., Minneapolis, Minn.
Bayley Blower Co. Milwaukee, Wis.
Bronson Fan Mfg. Corp., Los Angeles, Calif.
Brookside Corp., McCordsville, Ind.
Brundage Co., The, Kalamazoo, Mich.
Burden Div., Torrington Mfg. Co., Los Angeles, Calif.
Carolina Blower Co., Inc., Greensboro, N. C.
Champion Blower & Forge Co., Lancaster, Pa.
Chicago Blower Corp., Franklin Park, Ill.
Clarage Fan Co., Kalamazoo, Mich.
Denbo Engineering & Sales Co., Inc., Indianapolis, Ind. (molded plastics)
Garden City Fan Co., Chicago, Ill.
General Blower Co., Morton Grove, Ill.
Hastings Air Control, Inc., Omaha, Nebr.
Industrial Plastic Fabricators, Norwood, Mass. (PVC)
Jan-Air, Inc., Richmond, Ill.
Lau Blower Co., Dayton, O.
Martin Fan & Blower Co., Chicago, Ill.
Master Fan Corp., Los Angeles, Calif.
Mayne Products Co., Dayton, O.
Moore Co., The, Marceline, Mo.
Morrison Products, Inc., Cleveland, O.
New York Blower Co., Chicago, Ill.
Peerless Electric Co., Warren, O.
Power Engineering Corp., Weirton, W. Va.
R & R Metal Products, Inc., Chicago, Ill.
Revcor Inc., Carpentersville, Ill.
Ripley Co., Inc., Middletown, Conn.
Torrington Mfg. Co., Torrington, Conn.
United States Air Conditioning Corp., Delaware, O.
Utility Appliance Corp., Los Angeles, Calif.
Utility Fan Corp., Div. of Utility Appliance Corp., Los Angeles, Calif.
Viking Air Products, Div. of National-U. S. Radiator Corp., Cleveland, O.
Western Blower Co., Seattle, Wash.
Westinghouse Electric Corp., Sturtevant Div., Boston, Mass.

WHISTLES AND HORNS, STEAM AND AIR

Leslie Co., Lyndhurst, N. J.
Powell Co., Wm., The, Cincinnati, O.

WHITE PRINT MACHINES

See Machines, Blue Print and White Print

WINDOW PANELS FOR AIR CONDITIONERS

See Panels, Window, for Air Conditioners

WINDOW VENTILATOR AND FILTER UNITS

See Units, Window Ventilator and Filter

WINDOWS, HEAT INSULATING

Anderson Corp., Bayport, Minn.
Chamberlin Co. of America, Detroit, Mich.
Libbey-Owens-Ford Glass Co., Toledo, O.
Mississippi Glass Co., St. Louis, Mo.
Pam Co., The, Portland, Ore. (skylight)
Pittsburgh Plate Glass Co., Pittsburgh, Pa.
Russell Co., F. C., The, Cleveland, O.
Southern Plastics Co., Columbia, S. C.

WIRE, ELECTRIC, NUMBERED, FOR CONTROL SYSTEMS

Chester Cable Corp., Chester, N. Y.
Electric Auto-Lite Co., Instrument & Gauge Div., Toledo, O.
Essex Wire Corp., Ft. Wayne, Ind.
Gavitt Wire & Cable Co., Div. of Amerace Corp., Brookfield, Mass.
General Electric Co., Construction Materials Div., Bridgeport, Conn.
Midwest Air Conditioning Co., Des Moines.
Midwest Automatic Control Co., Des Moines, Ia.
Moore & Co., Samuel, Mantua, O. (also for instrumentation)
Triangle Conduit & Cable Co., Inc., New Brunswick, N. J.
Westline Products Div. of Western Lithograph Co., Los Angeles, Calif.

WIRE, INSTRUMENT

Chester Cable Corp., Chester, N. Y.
Essex Wire Corp., Ft. Wayne, Ind.
Foxboro Co., Foxboro, Mass.
Gavitt Wire & Cable Co., Div. of Amerace Corp., Brookfield, Mass.
General Electric Co., Construction Materials Div., Bridgeport, Conn.
Minneapolis-Honeywell Regulator Co., Industrial Div., Philadelphia, Pa.
Thermo Electric Co., Inc., Saddle Brook, N. J.

WIRE, OIL BURNER IGNITION

Chester Cable Corp., Chester, N. Y.
Dielectric Products Co., Inc., Jersey City, N. J.
Essex Wire Corp., Ft. Wayne, Ind.
Packard Electric Div., General Motors Corp., Warren, O.
Phelps Dodge Copper Products Corp., New York, N. Y.

WIRING, COMPLETE ASSEMBLIES, CUSTOM-MADE

Airserco Mfg. Co., Inc., Pittsburgh, Pa.
Cornish-Rutland Co., Williamstown, Mass.
Dielectric Products Co., Inc., Jersey City, N. J.
Electric Auto-Lite Co., Instrument & Gauge Div., Toledo, O.
Essex Wire Corp., Ft. Wayne, Ind.
Gavitt Wire & Cable Co., Div. of Amerace Corp., Brookfield, Mass.
General Electric Co., Construction Materials Div., Bridgeport, Conn.
Hammett Electric Mfg. Co., Kansas City, Mo.
Kulka Electric Corp., Mt. Vernon, N. Y.
Packard Electric Div., General Motors Corp., Warren, O.

WRAP, PIPE

Asbestos Asphalt Insulation Co., Chicago, Ill.
Canvas Products Co., St. Louis, Mo.
Johns-Manville, New York, N. Y.
L. O. F. Glass Fibers Co., Toledo, O.
Minnesota Mining & Mfg. Co., St. Paul.
Mortell Co., J. W., Kankakee, Ill.
Rhopac, Inc., Skokie, Ill.
Tapecoat Co., The, Evanston, Ill. (cool tar protective coating in tape form for pipe, pipe joints, pipe fittings, insulated pipe underground and above ground.)
Wrap-On Co., Chicago, Ill.

WRENCHES, CHAIN, PIPE

Armstrong Bros. Tool Co., Chicago, Ill.
Billings & Spencer Co., Hartford, Conn.
Chicago Specialty Mfg. Co., Chicago, Ill.
Nye Tool Co., Chicago, Ill.
Reed Mfg. Co., Erie, Pa.
Talon Tools, Inc., North Arlington, N. J.
Toledo Pipe Threading Machine Co., Toledo, O.
Trimont Mfg. Co., Div. of St. Pierre Chain Corp., Worcester, Mass.

WRENCHES, PIPE

American Machine Wks., Inc., Racine, Wis.
Armstrong-Bridgeport Tool Mfg. Corp., Belleville, N. J.
Armstrong Bros. Tool Co., Chicago, Ill.
Basford Co., H. R., San Francisco, Calif.
Billings & Spencer Co., Hartford, Conn.
Bonney Forge & Tool Works, Allentown, Pa.
Crescent Tool Co., Jamestown, N. Y.
Erie Tool Works, Erie, Pa.
Frontier Bronze Corp., Niagara Falls, N. Y.
International Forge Co., Chicago, Ill. (aluminum)
Lowell Wrench Co., Worcester, Mass.
Lurie & Lurie, Chicago, Ill.
Nielsen, Inc., E. V., Stamford, Conn.
Nye Tool Co., Chicago, Ill.
Peck, Stow & Wilcox Co., Southington, Conn.
Proto Tool Co., Div. of Pendleton Tool Industries, Inc., Los Angeles, Calif.
Ridge Tool Co., Elyria, O.
Roddick Tool Co., Anaheim, Calif.
Sac Tool Co., St. Louis, Mo.
St. Piere Chain Corp., Worcester, Mass.
Snap-on Tools Corp., Kenosha, Wis.
Talon Tools, Inc., North Arlington, N. J.
Tedd Company, The, Rockford, Ill.
Toledo Pipe Threading Machine Co., Toledo, O.
Trimont Mfg. Co., Div. of St. Pierre Chain Corp., Worcester, Mass.
Walworth Co., New York, N. Y.

WRENCHES, PIPE, REPLACEABLE JAW

Armstrong Bros. Tool Co., Chicago, Ill.
Billings & Spencer Co., Hartford, Conn.
Crescent Tool Co., Jamestown, N. Y.
Erie Tool Wks., Erie, Pa.
International Forge Co., Chicago, Ill.
Lurie & Lurie, Chicago, Ill.
Nye Tool Co., Chicago, Ill.
Proto Tool Co., Div. of Pendleton Tool Industries, Inc., Los Angeles, Calif.
Ridge Tool Co., Elyria, O.
Trimont Mfg. Co., Div. of St. Pierre Chain Corp., Worcester, Mass.
Walworth Co., New York, N. Y.

WRENCHES, RATCHET

Armstrong Bros. Tool Co., Chicago, Ill.
Billings & Spencer Co., Hartford, Conn.
Bonney Forge & Tool Works, Allentown, Pa.
Custanite Corp., Brooklyn, N. Y.
Duro Metal Products Co., Chicago, Ill.
Gardner-Denver Co., Quincy, Ill.
Greene, Tweed & Co., North Wales, Pa.
Kent-Moore Organization, Inc., Warren, Mich.
Lowell Wrench Co., Worcester, Mass.
Lurie & Lurie, Chicago, Ill.
Proto Tool Co., Div. of Pendleton Tool Industries, Inc., Los Angeles, Calif.
Sac Tool Mfg. Co., St. Louis, Mo.
Snap-on Tools Corp., Kenosha, Wis.
Williams & Co., J. H., Buffalo, N. Y.

WRENCHES, TORQUE INDICATING

Ammco Tools, Inc., North Chicago, Ill.
Armstrong Bros. Tool Co., Chicago, Ill.
Bonney Forge & Tool Works, Allentown, Pa.
Duro Metal Products Co., Chicago, Ill.
Ingersoll-Rand Co., New York, N. Y. (for torque control)
JO-Line Tools, Inc., South Gate, Calif.
Kent-Moore Organization, Inc., Warren, Mich.
Portable Electric Tools, Inc., Chicago, Ill.
Proto Tool Co., Div. of Pendleton Tool Industries, Inc., Los Angeles, Calif.
Richmont, Inc., Monrovia, Calif.
Sac Tool Mfg. Co., St. Louis, Mo.
Snap-on Tools Corp, Kenosha, Wis.
Sturtevant Co., P. A., Addison, Ill.
Williams & Co., J. H., Buffalo, N. Y.
Wilson Co., K. R., Arcade, N. Y.
X-4 Corp., West Acton, Mass. (geared head)

X-RAY MACHINES AND FILM

See Machines and Film, X-Ray

ZONE CONTROLS

See Systems, Heating, Zone Control

DIRECTORY SECTION

HEATING, PIPING, AND AIR CONDITIONING EQUIPMENT FOR INDUSTRIAL AND ALL OTHER LARGE BUILDINGS

PART 3—ALL TRADE NAMES

A-3—Cleaning compounds. Airkem, Inc., New York, N. Y.

A-B—Motor controllers, pilot lights, regulators, relays, solenoids, switches, valves. Allen-Bradley Co., Milwaukee, Wis.

ABC—Dehumidifiers, humidifiers, dust collectors. American Blower Div. of American-Standard, Detroit, Mich.

ABR-A-Saw—Cutters, tools. Collins Machinery Corp., Los Angeles, Calif.

A-C—Water treatment. Elgin Softener Corp., Elgin, Ill.

ACB—Coatings. Tropical Paint & Oil Co., Cleveland, O.

AISI Automatic Smoke Sampler—Testers, smoke. Research Appliance Co., Allison Park, Pa.

A & R—Dehumidifiers. Air & Refrigeration Corp., New York, N. Y.

ARR 300#—Unions. Jefferson Union Co., Lexington, Mass.

ARRC—Couplings, fittings, flanges, unions. Union Metal Wks. Co., Inc., Chelsea, Mass.

ASME—Regulators. Bell & Gossett Co., Morton Grove, Ill.

Abrasoweld—Electrodes. Lincoln Electric Co., Cleveland, O.

Abso-Dry—Refrigerant dehydrators. Henry Valve Co., Melrose Park, Ill.

Absolute—Air filters. Cambridge Filter Corp., Syracuse, N. Y.

Accurex—Pipe gages. Greenfield Tap & Die Div. of United Greenfield Corp., Greenfield, Mass.

Ace—Dampers. Marsto Machine Co., West Quincy, Mass.

Ace—Fittings, pipe, protective coatings, pumps, tanks, valves. American Hard Rubber Co., Div. Amerace Corp., Butler, N. J.

Ace-Flex—Plastic tubing. American Hard Rubber Co., Div. of Amerace Corp., Butler, N. J.

Ace-Ite—Plastic pipe, fittings, valves. American Hard Rubber Co., Div. of Amerace Corp., Butler, N. J.

Ace Riviclor—Fittings, pipe, valves. American Hard Rubber Co., Div. of Amerace Corp., Butler, N. J.

Ace-Saran—Plastic tubing, fittings. American Hard Rubber Co., Div. of Amerace Corp., Butler, N. J.

Ace Tempron—Fittings, pipe. American Hard Rubber Co., Div. of Amerace Corp., Butler, N. J.

Ace-Vent—Valves. Ra-Rich Mfg. Corp., Holtsville, Long Island, N. Y.

Acipco—Steel tubing. American Cast Iron Pipe Co., Birmingham, Ala.

Acolite—Enamels and lacquers. Acorn Refining Co., Cleveland, O.

Acoustilite—Insulation. Insulite Div. Minnesota & Ontario Paper Co., Minneapolis, Minn.

Acragage—Indicating gages. International Register Co., Chicago, Ill.

Acratherm—Thermostats. Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.

Actrol—Valves. Baso, Inc., Milwaukee, Wis.

Adacast—Refractories. Botfield Refractories Co., Philadelphia, Pa.

Adamant—Furnace cement, refractories and refractory cement. Botfield Refractories Co., Philadelphia, Pa.

Adapatch—Refractories. Botfield Refractories Co., Philadelphia, Pa.

Adastic—Insulating cement, insulation. Botfield Refractories Co., Philadelphia, Pa.

Adjusta-Flo—Valves. Sullivan Valve & Engineering Co., Butte, Mont.

Adjusto-Deck—Racks. Haertel Co., Walter, Minneapolis, Minn.

Adjust-O-Feeder—Feeders, pumps, water treatment. Proportioneers, Inc., Div. of B-I-F Industries, Inc., Providence, R. I.

Adjust-O-Slide—Motor bases. American Pulley Co., The, Philadelphia, Pa.

Adjustor—Heating systems, elbows. The Kehm Corp., Chicago, Ill.

Adsorbit—Air freshening compounds, adsorbers, dehumidifiers, filters. Barnebey-Cheney Co., Columbus, O.

Advance—Scaffolds. Beaver Advance Corp., Ellwood City, Pa.

Aerisweld—Electrodes. Lincoln Electric Co., Cleveland, O.

Aero—Aftercoolers, heat exchangers. Niagara Blower Co., New York, N. Y.

Aero—Radiation, hangers or brackets. National-U. S. Radiator Corp., Johnstown, Pa.

Aerodyne—Fans, ventilators. Jeffrey Mfg. Co., Columbus, O.

Aerodyne—Collectors. Green Fuel Economizer Co., Inc., The, Beacon, N. Y.

Aerodyne—Dust collectors. Research-Cottrell, Inc., Bound Brook, N.J.

Aerofuse—Air diffusers. Tuttle & Bailey, Div. of Allied Thermal Corp., New Britain, Conn.

Aerolag—Insulation. Johns-Manville, New York, N.Y.

Aerolux—Air conditioning units. Johnson Co., S. T., Oakland, Calif.

Aeromaster—Propeller fans, blades. Koppers Company, Inc., Metal Products Div., Baltimore, Md.

Aeromatic Exhauster—Ventilators. Octagon Ventilator Co., Chicago, Ill.

Aeropass—Condensers. Niagara Blower Co., New York, N. Y.

Aeropel—Ventilators. American Blower Div. of American-Standard, Detroit, Mich.

Aeroplane—Roof ventilators. Jordan & Co., Inc., Paul R., Indianapolis, Ind.

Aeroplex—Fans. Bayley Blower Co., Milwaukee, Wis.

Aeropull—Roof ventilators. Jordan & Co., Inc., Paul R., Indianapolis, Ind.

Aerosolve—Air filters. Cambridge Filter Corp., Syracuse, N. Y.

Aerospot—Fans. South Bend Air Products, Inc., South Bend, Ind.

Aerotech—Meters. United Electric Controls Corp., Watertown, Mass.

Aerotube—Insulation. Johns-Manville, New York, N.Y.

Aeroturn—Collectors. Koppers Co., Inc., Metal Products Div., Baltimore, Md.

Aerovane—Anemometers. Friez Instrument Div., Bendix Aviation Corp., Baltimore, Md.

Aerovane—Grilles, registers. Tuttle & Bailey, Div. of Allied Thermal Corp., New Britain, Conn.

Aertite—Compounds. Johns-Manville, New York, N. Y.

Afco—Heaters, air conditioning units. American Furnace Co., St. Louis, Mo.

Affco—Louvers and shutters, dampers. American Foundry & Furnace Co., Bloomington, Ill.

Agastat—Electrical relays. A'G'A Div. of Elastic Stop Nut Corp. of America, Elizabeth, N. J.

Agaswitch—Time switches. A'G'A Div. of Elastic Stop Nut Corp. of America, Elizabeth, N. J.

Agilene—Fittings, fans, sheets, ducts and duct fittings, pipe, tubing, welders, valves. American Agile Corp., Bedford, O.

Agilide—Ducts and duct fittings, fans, sheets, pipe, welders, valves. American Agile Corp., Bedford, O.

Agitair—Air diffusers, grilles, registers, filters, dampers, ventilators. Air Devices, Inc., New York.

AIM Brand—Angles, bars, beams, channels and tees; pipe hangers and supports; pipe storage racks; tank stands. Acme Steel Co., Chicago, Ill.

Airacoustic—Insulation. Johns-Manville, New York, N. Y.

Air-aid—Compounds. Lord & Clark Co., Inc., Boston, Mass.

Air Base—Diffusers. Kritzer Radiant Coils, Inc., Batavia, Ill.

Air Cell—Asbestos insulation. Keasbey & Mattison Co., Ambler, Pa.

Aircell Board—Insulation, Sheets. Norristown Asbestos Div., Nicolet Industries, Inc., Norristown, Pa.

Air Check—Boiler compounds. Refractory & Insulation Corp., New York, N.Y.

Airco—Arc welders, electrodes, weld testing, welding rod, solder, machines, torches, oxygen piping and regulating systems. Air Reduction Sales Co., A Div. of Air Reduction Co., Inc., New York, N. Y.

Aircon—Condensers. McQuay, Inc., Minneapolis, Minn.

Air-Con—Registers. Register & Grille Mfg. Co., Inc., Brooklyn, N. Y.

Aircoustat—Absorbers. Industrial Sound Control Dept. of Koppers Co., Inc., Metal Products Div., Baltimore, Md.

Airditioner—Air conditioning units. Modine Mfg. Co., Racine, Wis.

Air Door—Air curtain doorways. New Castle Products, Inc., New Castle, Pa.

Airefiner—Water treatment. Oakite Products, Inc., New York, N. Y.

AIRefrigeration—Air conditioning units. Williamson Co., Cincinnati, O.

Aire-Rectifier—Coolers, air conditioning units. Lintern Corp., Painesville, O.

Airette—Roof ventilators. Penn Ventilator Co., Philadelphia, Pa.

Airex—Air washers, fans, unit air conditioners, ventilators. Mountain States Equipment Co., Denver, Colo.

Airfeedrill—Electric and pneumatic drills. Gardner-Denver Co., Quincy, Ill.

Airflex—Couplings. Falk Corp., Milwaukee.

Air-flo—Louvers and shutters, dampers, regulators. Air Conditioning Products Co., Detroit, Mich.

Airflow Control—Fume disposal hoods. Kewaunee Mfg. Co., Adrian, Mich.

Airfoil—Fans, fan blades, ventilators. Aerovent Fan Co., Inc., Piqua, O.

Airfoil—Registers, scoops, grilles, dampers, diffusers. Titus Mfg. Corp., Waterloo, Ia.

Air Guide—Vanes. Titus Mfg. Corp., Waterloo, Ia.

Air Guide—Radiation. Rempe Co., Chicago.

Airistocrat—Fan blades. Torrington Mfg. Co., Torrington, Conn.

Airjet—Stacks and chimneys. General Products Co., Inc., Fredericksburg, Va.

Airjector—Ventilators. Swartwout Co., Cleveland, O.

Air Kits—Blower wheels. New York Blower Co., Chicago, Ill.

Airlift—Ventilators. Swartwout Co., Cleveland, O.

Airline—Torches, welding and cutting apparatus. Smith Welding Equipment Corp., Minneapolis, Minn.

Air Line—Motors. Brown-Brockmeyer Co., Inc., Dayton, O.

Airline-Norge Heat—Heaters, air conditioning units. Ingersoll Conditioned Air Div., Borg-Warner Corp., Kalamazoo, Mich.

Airliner—Fan blades, and fans. Burden Co., Alan E., Los Angeles, Calif.

Airlouver—Louvers and shutters. Swartwout Co., Cleveland, O.

Air Master—Diffusers, grilles, registers. Austin Engineering & Mfg. Co., Inc., Yaleta, Tex.

Airmaster—Dehumidifiers. Haertel Co., Walter, Minneapolis, Minn.

Air Mat-PC—Filters. American Air Filter Co., Inc., Louisville, Ky.

Airmat Arrester—Dust collectors. American Air Filter Co., Inc., Louisville, Ky.

Airmat Drifilter—Filters. Airgard Mfg. Co. Chicago, Ill.

Air-Max—Dampers, diffusers, fans, unit heaters, ventilators. Gallaher Co., The, Omaha, Neb.

Air Meter—Air velocity meters. Hastings-Raydist, Inc., Hampton, Va.

Airmover—Ventilators. Swartwout Co., Cleveland, O.

Air Mover—Exhausters. Mine Safety Appliances Co., Pittsburgh, Pa.

Airocool—Burners. National Airoil Burner Co., Inc., Philadelphia, Pa.

Airo-Flex—Registers. Auer Register Co., Cleveland, O.

Airoil—Oil burners. National Airoil Burner Co., Inc., Philadelphia, Pa.

Air-O-Matic—Air conditioning units. Williams Oil-O-Matic Heating Co., Div. of National Union Electric Corp., Columbus, O.

Airotor—Blower wheels. Torrington Mfg. Co., Torrington, Conn.

Airovent—Gas Burners. National Airoil Burner Co., Inc., Philadelphia, Pa.

Airpak—Filters. Conoflow Corp., Subsidiary of Walworth Co., Philadelphia.

Airphlo Vent—Roof ventilators. Octagon Ventilator Co., Chicago, Ill.

Air Prover—Regulators. A-P Controls Div., Controls Co. of America, Milwaukee, Wis.

Air Rad—Radiation. Penn Boiler & Burner Corp., Lancaster, Pa.

Airsan—Filters. Air Filter Corp., Milwaukee.

Air-Scoop—Eliminators, air separators. Taco Heaters, Inc. Cranston, R. I.

Airstat—Regulators. Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.

Airswitch—Thermostats, regulators. Minneapolis-Honeywell Regulator Co., Minneapolis.

Airtrol—Air eliminators. Bell & Gossett Co., Morton Grove, Ill.

Airtron—Ducts and duct fittings, hose. Arrowhead Products, Div. of Federal-Mogul-Bower Bearings, Inc., Long Beach, Calif.
Air-Tumbler—Dust collectors. Dust Suppression & Engineering Co., Lake Orion, Mich.
Air-Van—Ventilators, exhausters, fans. Gallaher Co., The, Omaha, Neb.
Air-X-it—Roof ventilators. Octagon Ventilator Co., Chicago, Ill.
Airxpel—Traps. Wright-Austin Co., Detroit.
Airxpeler—Roof ventilators, dampers, fittings, hose, exhausters, fans, panels and doors, wall ventilators, vents, louvers and shutters, vent flue caps. Ammerman Co., Inc., Stillwater, Minn.
Ajusto-Spede—Speed changers. Allis Co., Louis, Milwaukee, Wis.
Akon—Water treatment. Allis-Chalmers Mfg. Co., Milwaukee, Wis.
Aktiv—Cleaning compounds. Turco Products, Inc., Los Angeles, Calif.
Alaka—Protective coatings, enamels and lacquers. Alfred Hague & Co., Inc., Div. of Lacquer & Chemical Corp., Brooklyn, N. Y.
Alaskan—Fans, air conditioning units. National Engrg. & Mfg. Co., Sedalia, Mo.
Alathon—Plastics, powders and resins. duPont de Nemours & Co., E. I., Polychemicals Dept., Wilmington, Del.
Alcoa—Angles, compounds, rods, dehydrators, exchangers, pipe, sheets, tanks, tubing. Aluminum Co. of America, Pittsburgh, Pa.
Alcorjac—Pipe covering protectors. Aljon Mfg. Co., Inc., Maspeth, N.Y.
Alcotwin—Exchangers. Alco Products, Inc., Schenectady, N. Y.
Alcuplate—Clad sheets. General Plate Div., Metals & Controls Corp., Attleboro, Mass.
Alexall—Industrial adhesive tape. Boston Woven Hose & Rubber Co., Div. of American Biltrite Rubber Co., Cambridge, Mass.
Alfol—Insulation. Reflectal Corp. Subsid., Borg-Warner Corp., Chicago, Ill.
Algaecide—Water treatment. Allis-Chalmers Mfg. Co., Milwaukee, Wis.
Algaecide—Water treatment. Anderson Chemical Co., Inc., Macon, Ga.
Algicide—Water treatment. North American Mogul Products Co., The, Cleveland, O.
Align E-Z—Pipe nipples. Ra-Rich Mfg. Corp., Holtsville, Long Island, N. Y.
Aliron—Sheets, clad. General Plate Div., Metals & Controls Corp., Attleboro, Mass.
Alkaline—Compounds. Turco Products, Inc., Los Angeles, Calif.
Alkasteem—Water treatment. Anderson Chemical Co., Inc., Macon, Ga.
Alkyd—Protective coatings. Watson-Standard Co., Pittsburgh, Pa.
All-Chem—Rotary pumps. Eco Engineering Co., Newark, N. J.
Allen—Benders. Steel City Electric Co., Pittsburgh, Pa.
Allencote—Refractories and refractory cement. Allen Co., Robert G., Mechanicsville. N. Y.
Allenite—Soot destroyers. Allen Co., Robert G., Mechanicsville, N. Y.
All-In-One—Regulators. Bell & Gossett Co., Morton Grove, Ill.
Allispede—Speed changers. Allis Co., Louis, Milwaukee, Wis.
All-Motor—Gear-motors. Falk Corp., Milwaukee, Wis.
Allmul—Refractories and refractory cement. Babcock & Wilcox Co., Boiler Div., New York, N. Y.
Allprene—Gaskets. Chicago Gasket Co., Chicago, Ill.
Allspeed Selector—Mechanical changers. Worthington Corp., East Orange, N. J.
Alltemp—Insulation. Philip Carey Mfg. Co., Lockland, Cincinnati, O.
All-Tite Vane Runner—Vanes. Elgen Mfg. Corp., Long Island City, N. Y.
All-Weather Thinline—Air conditioning units. General Electric Co., Appliance & Television Receiver Div., Louisville, Ky.
Alnifer—Clad sheets. General Plate Div., Metals & Controls Corp., Attleboro, Mass.
Alnor—Anemometers, indicator controllers, thermometers. Illinois Testing Laboratories, Inc., Chicago, Ill.
Alodine—Protective coatings. Amchem Products, Inc., Ambler, Pa.
Aloyco—Gages, valves. Alloy Steel Products Co., Linden, N. J.
Alpine—Air conditioning units. International Metal Products Co., Phoenix, Ariz.
Alsiplate—Clad sheets. General Plate Div., Metals & Controls Corp., Attleboro, Mass.
Alternarc—Arc welders. Electric Arc, Inc., Newark, N. J.
Alumalung—Roof ventilators. Iron Lung Ventilator Co., Cleveland, O.
Alumend—Arc welding electrodes. Arcos Corp., Philadelphia, Pa.
Alumilux—Heaters. Clayton & Lambert Mfg. Co., Louisville, Ky.
ALUMINIZED STEEL—Sheets, aluminum coated. Armco Steel Corp., Middletown, O.
Aluminum—Roof ventilators. Iron Lung Ventilator Co., Cleveland, O.
Aluminweld—Electrodes. Lincoln Electric Co., Cleveland, O.
Alumnaweld—Solder and fluxes. Johnson Mfg. Co., Inc., Mt. Vernon, Ia.
A-Lum-O-Aire—Filters. Aluminum Wool Div., Carey Electronic Engineering Co., Springfield, O.
A-Lum-O-Aire—Filters. Carey Electronic Engineering Co., Metal Wool Div., Springfield, O.
Alundum—Cement, grinders and grinding wheels, refractories and refractory cement. Norton Co., Worcester, Mass.
AluTin—Solder. Eutectic Welding Alloys Corp., Flushing, N. Y.
Amballoy—Sheets. Byers Co., A.M., Pittsburgh, Pa.
Amblerex#2—Insulating cement. Keasbey & Mattison Co., Ambler, Pa.
Amchem—Isotopes. American Gas & Chemicals, Inc., Leak-Tec Div., New York, N. Y.
Amco—Protective coatings, welding compounds, solder. American Solder & Flux Co., Philadelphia, Pa.
Amco—Humidifiers, nozzles, psychrometers. Grinnell Co., Inc., Providence, R.I.
Amco—Control Systems, humidifiers, hygrometers. indicators, meters, nozzles, air conditioning units, psychrometers, valves. American Moistening Co., Cleveland, N.C.
Amer-Clone—Collectors. American Air Filter Co., Inc., Louisville, Ky.
Amer-glas—Air filters. Bowman Co., Inc., D. F., Clearwater, Fla.
Amer-glas—Unit filters. American Air Filter Co., Inc., Louisville, Ky.
American—Recorders, manometers, regulators, thermometers, transmitters, wells. Manning, Maxwell & Moore, Inc., Stratford, Conn.
American—Meters. Buffalo Meter Co., Buffalo, N. Y.
American—Heater. Hotstream Heater Co., Cleveland, O.
American AC—Air filters. American Air Filter Co., Inc., Louisville, Ky.
American Hammered—Rings. Koppers Company, Inc., Metal Products Div., Baltimore.
American H/V—Unit Filters. American Air Filter Co., Inc., Louisville, Ky.
American MW—Air filters. American Air Filter Co., Inc., Louisville, Ky.
American-Microsen — Transmitters. Manning, Maxwell & Moore, Inc., Stratford, Conn.
Amerigear—Couplings. Zurn Industries, Inc., Erie, Pa.
Amerjet—Collectors. American Air Filter Co., Inc., Louisville, Ky.
Amer-Kool—Air filters. American Air Filter Co., Inc., Louisville, Ky.
Amer-Plate—Tank linings. Amercoat Corp., South Gate, Calif.
Amervent—Unit ventilators. Herman Nelson Products, American Air Filter Co., Inc., Louisville, Ky.
Amesteam—Boilers. Ames Iron Works, Inc., Oswego, N. Y.
Aminco—Colorimeters, gage testers, indicator-controllers, indicators, pumps, recorders, regulators, recorder-controllers, relays, viscosimeters. American Instrument Co., Inc., Silver Spring, Md.
Ammonoduct—Pipe. Bethlehem Steel Co., Bethlehem, Pa.
Ampco—Masonry drills. Greenfield Tap & Die Div. of United Greenfield Corp., Greenfield, Mass.
Ampcoflex—Pipe fittings, fume disposal hoods, plastic valves, tanks, ducts and duct fittings, plastic pipe, plastic sheets. Atlas Mineral Products Co., Mertztown, Pa.
Ampcolite—Plastic pipe. Atlas Mineral Products Co., Mertztown, Pa.
Am-Pe-Co—Centrifugal fans. American Machine Products Co., Marshalltown, Ia.
Amphesive—Adhesives. Atlas Mineral Products Co., Mertztown, Pa.
Amp-Quartz—Heaters, electric heating panels, baseboard radiation. Ampere Industries, Newark, N.J.
Amprobe—Ammeters and voltmeters. Pyramid Instrument Corp., Lynbrook, Long Island, N.Y.
Amvent—Ventilators. Western Engineering & Mfg. Co., Venice, Calif.
Anaconda—Angles, bars, beams, channels and tees, electrodes, fittings, pipe, welding rod, sheets, tubing, valves. American Brass Co., Waterbury, Conn.
Anco—Water treatment. Anderson Chemical Co., Inc., Macon, Ga.
Anco Scale Remover—Compounds, scale removal, treatment. Anderson Chemical Co., Inc., Macon, Ga.
Andrite—Dehydrators. Ansul Chemical Co., Refrigeration Div., Marinette, Wis.
Anemotherm—Direct reading meters. Anemostat Corp. of America, New York, N. Y.
Ankorite—Packing. Anchor Packing Co., Philadelphia, Pa.
Anthratube—Boilers. Axeman-Anderson Co., Williamsport, Pa.
Anti-Capillary Compounds—Compounds. Eutectic Welding Alloys Corp., Flushing, N. Y.
Anti-Spatter—Welding compounds. Thompson and Co., Oakmont, Pa.
Anti-Spatter—Welding compounds. Wolfe-Kote Co., Inc., Sheboygan, Wis.
Apco—Turbine type pumps, systems. Aurora Pump Div., The New York Air Brake Co., Aurora, Ill.
Apeco—Blueprint machines. American Photocopy Equipment Co., Chicago, Ill.
Apex—Analyzers, recorders, indicators. Uehling Instrument Co., Paterson, N. J.
Apexior—Coatings. Dampney Co., Boston, Mass.
Aprilaire—Humidifiers. Research Products Corp., Madison, Wis.
Apsco—Switches, nozzles. April Showers Co., Inc., Washington, D. C.
Apthorp—Nozzles. Boston Machine Works, Inc., Lynn, Mass.
Aqua-Clear—Water treatment. Sudbury Laboratory, South Sudbury, Mass.
AquaCooler—Towers, cooling. The Marley Co., Kansas City, Mo.
Aqua-Cushion—Absorbers. Ra-Rich Mfg. Corp., Holtsville, Long Island, N. Y.
Aqua-Line—Radiation. York-Shipley, Inc., York, Pa.
Aqua-Pure—Filters. Cuno Engineering Corp., Meriden, Conn.
Aqua-Saver—Cooling towers. Peerless Products Div., United Cooling Towers, Inc., N. Little Rock, Ark.
Aquastat—Thermostats. Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.
Aqua-Tite—Seals. Schwitzer Corp., Indianapolis, Ind.
Aquatone—Treatment, compounds, steam and water. Ampion Corp., Long Island City, N.Y.
Aquatower—Cooling towers. Marley Co., The, Kansas City, Mo.
Aqulux—Water heaters. Johnson Co., S. T., Oakland, Calif.
Arcaloy—Electrodes. Alloy Rods Co., York, Pa.
Arc-Eng—Registers. Register & Grille Mfg. Co., Inc., Brooklyn, N. Y.
Arco—Radiation. American Radiator & Standard Sanitary Corp., Plumbing and Heating Div., New York, N. Y.
Arcoflame—Burners. American Radiator & Standard Sanitary Corp., Plumbing & Heating Div., New York, N.Y.
Arcoglas—Heaters. American Radiator & Standard Sanitary Corp., Plumbing & Heating Div., New York, N. Y.
Arcoleader-Oil—Boilers. American Radiator & Standard Sanitary Corp., Plumbing & Heating Div., New York, N. Y.
Arcoliner-Oil—Boilers. American Radiator & Standard Sanitary Corp., Plumbing & Heating Div., New York, N. Y.
Arco Sil—Hose, ducts and duct fittings. Arrowhead Products Div., of Federal-Mogul-Bower Bearings, Inc., Long Beach, Calif.
Arcostell—Heaters. American Radiator & Standard Sanitary Corp., Plumbing & Heating Div., New York, N. Y.
Arctic Circle—Air conditioning units. International Metal Products Co., Phoenix, Ariz.
Arid Air—Dehumidifiers. Tamms Industries Co., Chicago, Ill.
Arin—Louvers and shutters, dampers. Arex Co., Chicago, Ill.
Armaflex—Insulation, pipe and tubing. Armstrong Cork Co., Lancaster, Pa.
Armaglas—Insulation. Armstrong Cork Co., Lancaster, Pa.
Armalite—Insulation. Armstrong Cork Co., Lancaster, Pa.
Armaloy—Wrenches. Armstrong Bros. Tool Co., Chicago, Ill.
Armatemp—Insulating cement. Armstrong Cork Co., Lancaster, Pa.
Ar-Met—Meters. Brooks Rotameter Co., Lansdale, Pa.
Aroclor—Heat transfer oil. Monsanto Chemical Co., St. Louis, Mo.
Arrowtrol—Registers. Register & Grille Mfg. Co., Inc., Brooklyn, N. Y.
Art—Direct radiation, hangers or brackets. National-U. S. Radiator Corp., Johnstown, Pa.
Artic—Refrigerant. E. I. du Pont de Nemours & Co., Electrochemical Dept., Wilmington, Del.
Asbestocel—Boiler, tank & pipe insulation. Johns-Manville, New York, N. Y.
Asbestolux—Insulation. North American Asbestos Corp., Chicago, Ill.
Asbeston—Insulation. United States Rubber Co., New York, N.Y.
Asco—Valves, relays, solenoid and solenoid cells, strainers, switches, panel and control boards. Automatic Switch Co., Florham Park, N. J.
Ashcroft—Gages, cocks, recorders, switches, testers, transmitters. Manning, Maxwell & Moore, Inc., Stratford, Conn.
Aspir-Jet—Nozzles. Thermal Agency, Houston, Tex.
At-a-Glance—Gages. Krueger Sentry Gauge Co., Green Bay, Wis.
Atcotran—Indicator-controllers, indicators, recorder-controllers, recorders. Automatic Timing & Controls, Inc., King of Prussia, Pa.

Atcotrol—Switches. Automatic Timing & Controls, Inc., King of Prussia, Pa.

Athol Unions—Fittings, unions. Leavitt Machine Co., Orange, Mass.

Atlas—Adhesives. Flintkote Co., The, New York, N. Y.

Atlas—Diffusers, grilles, registers. J. B. Smith Co., Philadelphia, Pa.

Atlas—Fans, furnaces, heaters, air conditioning units. Tuck-Aire Furnace Co., San Francisco, Calif.

Atlastaflex—Tank linings. Atlas Mineral Products Co., Mertztown, Pa.

Atlastaply—Tank linings. Atlas Mineral Products Co., Mertztown, Pa.

Atlastavon—Tank linings, tanks. Atlas Mineral Products Co., Mertztown, Pa.

Atlastic 77—Cement and compounds. Atlas Mineral Products Co., Mertztown, Pa.

Atlastiseal—Tank linings. Atlas Mineral Products Co. Mertztown, Pa.

Atmo-Spray—Refrigerating condensers. Watkins Co., J.E., Maywood, Ill.

Atmos—Welding compounds. Eutectic Welding Alloys Corp., Flushing, N.Y.

Atmos-Therm—Condensers. Rempe Co., Chicago, Ill.

Atom-Arc—Electrodes. Alloy Rods Co., York, Pa.

Atometer—Meters. American Moistening Co., Cleveland, N.C.

Atomick—Humidifiers, nozzles. Maid-O'-Mist, Inc., Chicago, Ill.

Attic-Air—Propeller fans. Acme Engineering & Mfg. Corp., Muskogee, Okla.

Audivent—Unit ventilators. Herman Nelson Products, American Air Filter Co., Inc., Louisville, Ky.

Auto-Airman—Air filters. American Air Filter Co., Inc., Louisville, Ky.

AutoChemic—Welding compounds. Eutectic Welding Alloys Corp., Flushing, N.Y.

Auto-Jr—Valves. Beacon Brass Co., Waltham, Mass.

Auto-Klean—Filters, strainers. Cuno Engineering Corp., Meriden, Conn.

Autolite—Motors, wire, wiring, recorders, thermometers. Electric Auto-Lite Co., Instrument & Gauge Div., Toledo, O.

Autolube—Bearings. International Powder Metallurgy, Inc., Ridgway, Pa.

Automaze—Filters. Air-Maze Corp., Cleveland, O.

Auto-Stat—Blue and white print machines. American Photocopy Equipment Co., Chicago, Ill.

Auto Vent—Eliminators, humidifiers, valves. Maid-O'-Mist, Inc., Chicago, Ill.

Autronic—Recorders, indicator-controllers, meters, recorder-controllers, regulators. Swartwout Co., Cleveland, O.

Aveco—Valves. Associated Valve & Engineering Co., North Wales, Pa.

Avisco—Fibers for air filters. American Viscose Corp., New York, N.Y.

Axiflo—Fans. Westinghouse Electric Corp., Sturtevant Div., Boston, Mass.

Axivane—Blowers, and fans. Joy Mfg. Co., Pittsburgh, Pa.

B.A.C.—Condensers, oil coolers, cooling towers. Baltimore Aircoil Co., Inc., Baltimore, Md.

B. B.—Blast gates. Berger Bros. Co., Philadelphia, Pa

B & C—Plates, valves, unions. Beaton & Corbin Mfg. Co., Southington, Conn.

BCA—Bearings. Bearings Co. of America, Div. of Federal Mogul Bower Bearings, Inc., Lancaster, Pa.

B. & G.—Air eliminators, circulators, coolers, condensers, fittings, heat exchangers, heaters, heating systems, superheaters, temperature regulators, tanks, valves. Bell & Gossett Co., Morton Grove, Ill.

B-H—Insulation. Baldwin-Hill Co., Trenton, N. J.

B-H No. 1—Insulation, insulating cement. Baldwin-Hill Co., Trenton, N. J.

B-H Mono-Kover—Insulation. Baldwin-Hill Co., Trenton, N. J.

B & J—Orifices, pumps, strainers, systems, traps, valves. Barnes & Jones, Inc., Newtonville, Mass.

B & K—Pipe cutting and threading machines. Bignall & Keeler Div., John Ramming Machine Co., St. Louis, Mo.

B.O.—Cocks, joints, valves. Bordo Co., Inc., L. J., Glenside, Pa.

B & P Enamel—Enamels and lacquers. Tropical Paint Co., Cleveland, O.

B.T.U.—Pipe insulation, concrete. Zonolite Co., Chicago, Ill.

BV—Couplings. Dahl, G. W., Bristol, R. I.

B & W—Boilers, burners, desuperheaters, fuel economizers, refractories, stokers, superheaters. Babcock & Wilcox Co., Boiler Div., New York, N. Y.

B & W—Pipe fittings, flanges, tubes and tubing. Babcock & Wilcox Co., Tubular Products Div., Beaver Falls, Pa.

Bacite—Insulation, insulating cement. Bird-Archer Co., Philadelphia, Pa.

Baco—Soot destroyer, pumps. Bird-Archer Co., Philadelphia, Pa.

Badger—Time switches. Reliance Automatic Lighting Co., Racine, Wis.

Baflex—Enamels and lacquers, protective coatings. Interchemical Corp., Finishes Div., Newark, N. J.

Bakelite—Plastics, powders and resins. Union Carbide Plastics Co., Div. of Union Carbide Corp., New York, N.Y.

Balance-trol—Heating systems. Automatic Timing & Controls, Inc., King of Prussia, Pa.

BalanSeal—Valves. Farris Engineering Corp., Palisades Park, N. J.

Ball-Lok—Drives. V-Belt Clutch Co., Los Angeles, Calif.

Ball-Rite—Drills. Oster Mfg. Co., John, Milwaukee, Wis.

Baltograph—Machines and film, X-ray. Balteau Electric Corp., Stamford, Conn.

Baltospot—Machines and film, X-ray. Balteau Electric Corp., Stamford, Conn.

Bank Heat—Burners. Johnson Co., S. T., Oakland, Calif.

Banroc—Pipe insulation. Johns-Manville, New York, N. Y.

Bantam—Valves. Dahl, G. W., Bristol, R. I.

Barcol—Motors, operators. Barber-Colman Co., Rockford, Ill.

Bardex—Hose. Newage Industries, Inc., Jenkintown, Pa.

Barnes—Cutters. Armstrong Bros. Tool Co., Chicago, Ill.

Barnes—Cutters. Erie Tool Works, Erie, Pa.

Bar-O-X—Protective coatings. Truscon Laboratories Div., Devoe & Raynolds Co., Inc., Detroit, Mich.

Basa Hammers—Tools. Greene, Tweed & Co., North Wales, Pa.

Basaltwool—Insulation. Thermo-Sound Products, Div. of Kittell-Lacy, Inc., El Monte, Calif.

Base Ray—Baseboard radiation. Burnham Corp., Irvington, N. Y.

Basic magnesite—Refractories and refractory cement. Basic Inc., Cleveland, O.

Basifrit—Refractories and refractory cement. Basic Inc., Cleveland, O.

Basimix—Refractories and refractory cement. Basic, Inc., Cleveland, O.

Basmor—Heaters. Bastian-Morley Co., Inc., LaPorte, Ind.

Basoid—Valves. Baso Inc., Milwaukee, Wis.

Basotron—Valves. Baso Inc., Milwaukee, Wis.

Bayce-Heet—Radiation. Brown Products Corp., Union, N. J.

Bay State—Belting, packing. Boston Woven Hose & Rubber Co., Div. of American Biltrite Rubber Co., Cambridge, Mass.

Bear-Cat—Tape. Norton Co., Worcester, Mass.

Beco—Boards, control systems, controllers and starters, relays, switches, tags, thermostat guards. Better Engineered Controls, Los Angeles, Calif.

Beco-Cell—Corrosion treatment, devices, scale removal. Brown-Electro Co., Oklahoma City, Okla.

Bell-Ex—Ventilators. New York Blower Co., Chicago, Ill.

Bell-Pack—Clamps. Dresser Mfg. Div., Dresser Industries, Inc., Bradford, Pa.

Beloit—Machines, punches, power shears. Hendley & Whittemore Co., Beloit, Wis.

Bermico—Fiber glass, pipe fittings. Brown Co., Boston, Mass.

Bestfelt "Lamino Sponge"—Insulation. Keasley & Mattison Co., Ambler, Pa.

Bestoil—Pipe oil. Oster Mfg. Co., Wickliffe, O.

Beth-Co-Weld—Pipe. Bethlehem Steel Co., Bethlehem, Pa.

Beth-Cu-Loy—Sheets. Bethlehem Steel Co., Bethlehem, Pa.

Bi-Air—Burners. John Zink Co., Tulsa.

Bifurcator—Fans. DeBothezat Fans Div., American Machine & Metals, Inc., East Moline, Ill.

Big Chief—Refractories and refractory cement. Green Fire Brick Co., A. P., Mexico, Mo.

Bildrite—Insulation. Insulite Co., Minneapolis, Minn.

Biltin—Heaters. Taco Heaters, Inc., Cranston, R. I.

Bi-Metalic—Thermometers. Taylor Instrument Companies, Rochester, N.Y.

Bi-Mix—Burners. John Zink Co., Tulsa, Okla.

Binoc—Thermometers. Taylor Instrument Companies, Rochester, N. Y.

Bitumastic—Protective coatings, enamel and lacquers, high temperature paint. Koppers Co., Inc., Pittsburgh, Pa.

Bituplastic—Coatings. Koppers Co., Inc., Pittsburgh, Pa.

Black Baking Japans—Enamels and lacquers. Hilo Varnish Co., Div. of Carpenter-Morton Co., Everett, Mass.

Blakite—Cement. Johns-Manville, New York, N. Y.

Blastaire—Fans, and blower wheels. Revcor Inc., Carpentersville, Ill.

Blazecrete—Refractories. Johns-Manville, New York, N. Y.

Blaze Pruf Silverlume—Paint. Wilbur & Williams Co., Brighton, Mass.

Blend-Air—Ducts and duct fittings. Coleman Co., Inc., The, Wichita, Kans.

Blenders—Diffusers. Coleman Co., Inc., The, Wichita, Kans.

Blizzard—Air Conditioning units. Palmer Mfg. Corp., Phoenix, Ariz.

Bloapco—Dust collectors. Blower Application Co., Milwaukee, Wis.

Blu-Cold—Compressors. Lehigh Mfg. Co., Div. of Lehigh Inc., Easton, Pa.

Blu-Flame—Burners, heaters. Vacuum Gas Burner Co., Olean, N. Y.

Blue-Bantam—Valves. Henry Valve Co., Melrose Park, Ill.

Blue Circle—Heating boilers. Dunkirk Radiator Corp., Dunkirk, N. Y.

Blue Cross—Duct tape. Industrial Tape Div., Hampton Mfg. Co., New Rochelle, N.Y.

Blue Dot—Benders. Imperial Brass Mfg. Co., Chicago, Ill.

Blue Flag—Pipe wrap. L.O.F. Glass Fibers Co., Toledo, O.

Blue-Line—Burners. Gordon & Piatt, Inc., Winfield, Kans.

Blue-Point—Cutters, threading die chasers, drills, tools, wrenches. Snap-on Tools Corp., Kenosha, Wis.

Blue Ribbon—Headers and nipples. Chicago Nipple Mfg. Co., Oak Park, Ill.

Blue Streak—Dehydrators. Wabash Corp., Chicago, Ill.

Boardman—Pump governors. Locke Regulator Co., Salem, Mass.

Boilergard—Low water cut-offs. Maid-O'-Mist, Inc., Chicago, Ill.

Boiler-Lox—Compounds. Radiator Specialty Co., Charlotte, N. C.

Boiler Solder Seal—Compounds. Radiator Specialty Co., Charlotte, N. C.

Boltaron—Plastic sheets for ducts and hoods. Bolta Products, A Div. of General Tire & Rubber Co., Lawrence, Mass.

Boltaron—Tubing. LaFavorite Rubber Mfg. Co., Hawthorne, N. J.

Bolt-O-Seal—Bolts. Parker Seal Co., Culver City, Calif.

Bondmaster—Adhesives. Rubber & Asbestos Corp., Bloomfield, N. J.

Bondwich—Clad sheets. General Plate Div., Metals & Controls Corp., Attleboro, Mass.

Booster—Units, fuel oil. Cleaver-Brooks Co., Milwaukee, Wis.

Borgana—Compounds, treatments. Strong, Carlisle & Hammond, Cleveland, O.

Bosco—Clay pipe. Bowerston Shale Co., The, Bowerston, O.

Box-Fin—Baseboard radiation. Edwards Engineering Corp., Pompton Plains, N.J.

Branford—Unions. Malleable Iron Fittings Co., Branford, Conn.

Brassweld—Compounds. Sight Feed Generator Co., West Alexandria, O.

Braxon—Compounds, scale removal, water treatment. Anderson Chemical Co., Inc., Macon, Ga.

Brazaloy Fluxes—Solder. All-State Welding Alloys Co., Inc., White Plains, N. Y.

Brazolets—Fittings. Bonney Forge & Tool Wks. Allentown, Pa.

Breeze—Adsorbers. Barnebey-Cheney Co., Columbus, O

Breeze Master—Fans. Acme Engineering & Mfg. Corp., Muskogee, Okla.

Breezo—Fans. Buffalo Forge Co., Buffalo, N. Y.

Breezy-Air—Air conditioning units. Barwick Mfg. Corp., Wichita, Kan.

Brilliant Fire—Heaters. Ohio Foundry & Mfg. Co., Steubenville, O

Brite Kote—Valves, elbows and tees. Hammond Valve Corp., Hammond, Ind.

Bronco—Clad sheets. General Plate Div., Metals & Controls Corp., Attleboro, Mass.

Bronze-Arc C—Electrodes. Alloy Rods Co., York, Pa.

Bronze-Arc Mn—Electrodes. Alloy Rods Co., York, Pa.

Bronze-Chem—Rotary pumps. Eco Engineering Co., Newark, N. J.

Bronzeweld—Compounds. Sight Feed Generator Co., West Alexandria, O.

Bronzochrom—Gas welding rod. Eutectic Welding Alloys Corp., Flushing, N. Y.

Brule—Incinerators. Goder Incinerator Corp., Blue Island, Ill.

Built-In Thinline—Air conditioning units. General Electric Co., Appliance & Television Receiver Div., Louisville, Ky.

Bulator—Grilles. Hendrick Mfg. Co., Carbondale, Pa.

Bulk-Flo—Conveyors. Link-Belt Co., Chicago, Ill.

Bulldog—Welders. Mid-States Welder Mfg. Co., Chicago, Ill.

Bulldog—Bolts, drills, fasteners. Polis Mfg. Co., Div. of Gregory Industries, Lorain, O.

Bulldog—Shears and snips. Wiss & Sons Co., J., Newark, N.J.

Bull Dog—Stocks and dies. Oster Mfg. Co., Wickliffe, O.

Bull Dog—Pulleys and sheaves, belting, tape. Boston Woven Hose & Rubber Co., Div. of American Biltrite Rubber Co., Cambridge, Mass.

Bull's Eye—Glasses. Fischer & Porter Co., Hatboro, Pa.
Bullet—Filters. Sealed Unit Parts Co., Inc., New York, N. Y.
BunaN—Plastic pipe. Vanton Pump & Equipment Corp., Hillside, N. J.
Burdco—Blades, fans. Burden Co., Alan E., Los Angeles, Calif.
Burkay—Heaters. Smith Corp., A. O., Permaglas Div., Kankakee, Ill.
Burks—Pumps. Decatur Pump Co., Decatur, Ill.
Burnham—Pumps. Union Steam Pump Co., Battle Creek, Mich.
Buster—Shears and snips. Lidseen of North Carolina, Inc., Hayesville, N. C.
BUX—Welding and drill positioners. Buck Mfg. Co., San Jose, Calif.

CBR System—Air sterilizing units. Kewaunee Mfg. Co., Adrian, Mich.
C-E—Boilers, stokers, fuel economizers. Combustion Engineering, Inc., New York.
C-E Heatmaster—Air conditioning units. Combustion Engineering, Inc., New York, N. Y.
C-E Lamont Controlled Circulation—Heating systems. Combustion Engineering, Inc., New York, N. Y.
C-E Raymond—Air separators. Combustion Engineering, Inc., New York, N. Y.
C-E Raymond Flash Dryer—Dryers. Combustion Engineering, Inc., New York, N. Y.
C-E Spreader—Stokers. Combustion Engineering. Inc., New York, N. Y.
C-H—Alarms, blocks, control systems, pilot and signal lights, solenoid and solenoid coils, controllers and starters, heaters, relays, regulators, switches, operators, valves. Cutler-Hammer, Inc., Milwaukee, Wis.
CH—Heaters. McQuay, Inc., Minneapolis, Minn.
CHPE Controller—Regulators. Hays Corp., The, Michigan City, Ind.
C & L—Heaters, torches. Clayton & Lambert Mfg. Co., Louisville, Ky.
CM—Hoists. Chisholm-Moore Hoist Div., Columbus McKinnon Chain Corp., Tonawanda, N. Y.
CMC Aluminum—Enamels and lacquers. Acorn Refining Co., Cleveland, O.
CP—Aftercoolers, clamps, compressors, engines, expanders, grinders and grinding wheels, hoists, machines, pumps, tools. Chicago Pneumatic Tool Co., New York, N. Y.
C & R—Regulators. Automatic Control Co., St. Paul, Minn.
CS—Air conditioning units. Young Radiator Co., Racine, Wis.
CSP—Transformers. Westinghouse Electric Corp., Pittsburgh, Pa.
C.V.—Plastic pipe. Mueller Brass Co., Port Huron, Mich.
CW—Pipe. Spang-Chalfant, Div. of National Supply Co., Pittsburgh, Pa.
CWF—Chillers. Taco Heaters, Inc., Cranston, R. I.
Cablestat—Cable. Wiegand Co., Edwin L., Pittsburgh, Pa.
Cadillac—Portable hoists. Aluminum Products, Inc., Fort Lauderdale, Fla.
Cadillac—Meters. Central Station Steam Co., Detroit, Mich.
Cafco—Insulation cement. United States Mineral Wool Co., Stanhope, N. J.
Calco—Valves. California Brass Mfg. Co., Los Angeles, Calif.
Cal-Fin—Pipe, tubing, radiation. Drayer-Hanson, Div. of National-U. S. Radiator Corp., Los Angeles, Calif.
Calktite—Cement and compounds. United States Stoneware Co., New York, N. Y.
Calol—Protective coatings. Standard Oil Co. of California, San Francisco, Calif.
Calorex—Oil burners, fuel oil preheaters, fuel oil units. W. N. Best Combustion Equipment Co., Inc., Carlstadt, N.J.
Caltemp—Insulation, insulating cement. Pabco Industrial Insulations Div., Fibreboard Paper Products Corp., San Francisco, Calif.
Camomatic—Valves. Belco Industrial Equipment Div., Bogue Electric Mfg. Co., Paterson, N. J.
Campbell—Regulators, controls. Fuel Reduction Corp., Chicago, Ill.
Capillary—Air washers. Clarage Fan Co., Kalamazoo, Mich.
Capillary—Air washers, humidifiers, cooling towers, unit air conditioners. Air & Refrigeration Corp., New York, N. Y.
Capitolaire—Furnaces, compressors, water chillers, refrigerating condensers, radiation, air conditioning units. National-U. S. Radiator Corp. Johnstown, Pa.
CaPlugs—Plugs, caps and closures. Protective Closures Co., Inc., CaPlugs Div., Buffalo, N. Y.
Caposil—Cement, insulation. North American Asbestos Corp., Chicago, Ill.
Caposite—Cement, insulation. North American Asbestos Corp., Chicago, Ill.
Carbolite—Soot destroyers. Ampion Corp., Long Island City, N. Y.
Carbozite—Coatings. Ohmlac Paint & Refining Co., Long Island City, N. Y.
Careycel—Insulation. Philip Carey Mfg. Co., Lockland, Cincinnati, O.
Cascade—Water heaters. The Cleveland Heater Co., Cleveland, O.
Cash-Acme—Feeders, pipe strainers, regulators, valves. Cash Valve Mfg. Corp., A. W., Decatur, Ill.
Cassel—Templates. Graphic Indicator Co., Los Angeles, Calif.
Castalu—Fans, wheels. R & R Metal Products, Inc., Chicago, Ill.
Cast-Refract—Refractories. Quigley Co., Inc., New York, N. Y.
Catalina—Radiators, electric. Slant-Fin Radiator Corp., Richmond Hill, N. Y.
Catch-All—Dehydrators and filters. Sporlan Valve Co., St. Louis, Mo.
Cathochem—Water treatment. Electro Rust-Proofing Corp., Belleville, N. J.
Causul—Valves. Lunkenheimer Co., Cincinnati, O.
CC Coatings—Protective coatings, paint. Chemical Solvent Co., Birmingham, Ala.
Cell Concrete—Concrete. Dockstader, Inc., S. E., Washington, D. C.
Cemcoat—Enamels and lacquers. Sonneborn Sons, Inc., L., Building Products Div., New York, N. Y.
Cementseal—Enamels and lacquers. Acorn Refining Co., Cleveland, O.
CenTraVac—Compressors. Trane Co., The, La Crosse, Wis.
Centri-Chem—Centrifugal pumps. Eco Engineering Co., Newark, N. J.
Centripac—Packing. Johns-Manville, New York N. Y.
Centripeller—Roof ventilators. Jordan & Co., Inc., Paul R., Indianapolis, Ind.
Centri-Vent—Roof ventilators. Midwest Air-moving Corp., Willoughby, O.
Century—Pipe. Keasbey & Mattison Co., Ambler, Pa
Century—Boilers. Smith Co., Inc., H. B., The, Westfield, Mass.
Ceramiduct—Ducts and duct fittings. Straitsville Brick Co., New Straitsville, O.
Cert-a-bar—Conduits. Stillwater Clay Products Co., The, Cleveland, O.
Certified Climate—Air conditioning units, washers. Parks-Cramer Co., Fitchburg, Mass.
Cesco—Fittings. Columbia Engineering Service Co., Santa Rosa, Calif.
C-Flux—Solder and fluxes. American Solder & Flux Co., Philadelphia, Pa.
Challenger—Hoists. Coffing Hoist Div., Duff-Norton Co., Danville, Ill.
Chamfer Trade—Electrodes. Eutectic Welding Alloys Corp., Flushing, N. Y.
Champ—Non-metal hose. LE-HI Div., Hose Accessories Co., Philadelphia, Pa.
Champion—Furnaces, heaters. National Heater Co., Inc. St. Paul, Minn.
Champion—Gas fired heaters. Bastian-Morley Co., Inc., LaPorte, Ind.
Champion—Pumps. Peerless Pump Div., Food Machinery & Chemical Corp., Los Angeles, Calif.
Chan-All—Pipe storage racks. The Modern Hanger Corp., Cleveland, O.
Charg-A-Can—Refrigerants. American Potash & Chemical Corp., Aerosol & Refrigeration Div. Los Angeles, Calif.
Chemiseal—Seals, gaskets, joints, protective coatings, packing, couplings, shaft. United States Gasket Co., Camden, N. J.
Chem-o-Feeder—Feeders, pumps, water treatment. Proportioneers, Inc., Div. of B-I-F Industries, Inc, Providence, R. I.
Chem-O-Shot—Pumps. Proportioneers, Inc., Div. of B-I-F Industries, Inc., Providence, R I
Chempac—Gaskets, packing. Johns-Manville, New York, N. Y.
Chem-Rem—Protective coatings. Speco, Inc., Cleveland, O.
Chesterflex—Wire. Chester Cable Corp., Chester, N. Y.
Chesterflur—Wire. Chester Cable Corp., Chester, N. Y.
Chevron—Packing. Garlock Packing Co., Palmyra, N. Y
Chex-Spray—Valve bonnet shields. Industrial Products Co., Philadelphia, Pa.
Chicago—Brakes. Dreis & Krump Mfg. Co., Chicago Ill.
Chill Air—Air conditioning units, fans. National Engineering & Mfg. Co., Sedalia, Mo.
Chil-Lator—Coolers. McQuay, Inc., Minneapolis, Minn.
Chill-Pak—Refrigerating compressors. Dialatemp, Inc., St. Louis, Mo.
CHILL VACTOR—Steam jet compressors. Croll-Reynolds Engineering Co., Inc., New York, N Y.
Chimney Crown—Caps. Coleman Co., Inc., The, Wichita, Kans.
Chimney Sweep—Chemical destroyers. Coughlan Co., G. N., West Orange, N. J.
Chinook—Ferrous heating surface. Bayley Blower Co., Milwaukee, Wis.
Chlorimet—Heat exchangers, fans, fittings, heaters, pipe, pumps, nozzles, valves. Duriron Co., Inc., The, Dayton, O.
Chlorinizer—Chlorinators, and treatment. Builders-Providence Div., B-I-F Industries, Inc., Providence, R. I.
Chlor-O-Feeder—Feeders, pumps. Proportioneers, Inc., Div. of B-I-F Industries, Inc., Providence, R. I.
Chlor-O-Mite—Pumps, water treatment. Proportioneers, Inc., Div. of B-I-F Industries, Inc., Providence, R. I.
Chore Boy—Incinerators. Incinerator Products Co., Detroit, Mich.
Chore Boy—Burners. Standard Fuel Engineering Co., Detroit, Mich.
Chromalox—Heat exchangers, electric heating panels, preheaters, pipe thawers, fuel oil units, dryers, indicator-controllers, heating systems, radiation, superheaters, thermostats, switches, ventilators, unit heaters. Wiegand Co., Edwin L., Pittsburgh, Pa.
Chrome—Packing. Chicago Belting Div., Chicago-Allis Mfg. Corp., Chicago, Ill.
Chrome Lock—Gaskets, tape. Products Research Co., Los Angeles, Calif.
Chromend—Electrodes. Arcos Corp., Philadelphia, Pa.
ChromiCoat—Protective coatings. Oakite Products, Inc., New York, N. Y.
Chromix—Refractories. Quigley Co., Inc., New York, N. Y
Chromolox—Protective coatings. Master Mechanics Co., Cleveland, O.
Chronoflo—Flow meters, gages, indicators, recorders. Builders-Providence Div., B-I-F Industries, Inc., Providence, R. I.
Chronometer—Valves. Defender Instrument & Regulator Co., Boody, Ill.
Cinch—Expansion bolts, expansion anchors. National Lead Co., New York, N. Y.
Circuitrol—Panel and control boards. Continental Electric Equipment Co., Cincinnati, O.
Circu-Ray—Heaters. Temco, Inc., Nashville, Tenn
Clair-Tex—Connections. St. Clair Rubber Co., Detroit, Mich
Clamp-A-Leak—Pipe repair clamps. Chelsea Metal Stamping Co., New York, N. Y.
Clarco—Unit heaters. Clarage Fan Co., Kalamazoo Mich
Cla Rite—Filters. Croll-Reynolds Engineering Co., Inc., New York, N Y.
Claymont—Steel pipes. Wickwire Spencer Steel Div., The Colorado Fuel & Iron Corp., New York, N. Y.
Clean-Flo—Motors. Allis Co., Louis, The, Milwaukee, Wis.
Clean Right—Soot destroyers. General Filters, Inc., Novi, Mich.
Clear-stream—Treatment. Reynolds Water Conditioning Co., Detroit, Mich.
Clearstream—Pipe fittings; plastic pipe; plastic tubing. Yardley Plastic Co., Columbus, O.
Clearview—Gages. Boston Machine Works Co., Lynn, Mass.
Cleerall—Air filters. Continental Air Filters, Inc., Louisville, Ky.
Cleveland—Heaters. Hotstream Heater Co., Cleveland, O
Clevite—Bearings. Cleveland Graphite Bronze Co., Div. of Clevite Corp., Cleveland, O.
Cliff—Boilers, water heaters. Terre Haute Boiler Works Co., Terre Haute, Ind.
Climate Changer—Unit air conditioners. Trane Co., The, LaCrosse, Wis.
Climate-Lab—Test chambers. American Instrument Co., Inc., Silver Spring, Md.
Climatrol—Boilers, condensers, furnaces, heaters, fans, air conditioning units. Mueller Climatrol, Div. of Worthington Corp., Milwaukee, Wis.
Clipper—Fans. Trade-Wind Motorfans, Inc., Pico Rivera, Calif.
Clipper—Refractories and refractory cement. Green Fire Brick Co., A. P., Mexico, Mo.
Clipper Seals—Packing seals. Johns-Manville, New York
Clorinal—Electricap capacitors. Sprague Electric Co., North Adams, Mass.
Coal Chuter—Coal and ash conveyors. New London Engineering Co., New London, Wis.
Coal-Pak Automatic—Boilers. International Boiler Works Co., The, East Stroudsburg, Pa.
Cocheo—Belting. Williams & Son, I. B., Dover, N. H.
Coeco—Controls and dampers. Combustion Equipment Co., Moline, Ill.
Cold Generator—Chillers. Trane Co., The, La Crosse, Wis.
Coldmoble—Air conditioning units. McGraw-Edison Co., Clark Div. & Tropic-Aire Div., Chicago, Ill.
Cold Plate—Coils, condensers, coolers. Dean Thermo-Panel Coil Div., Dean Products, Inc., Brooklyn, N. Y.
Color-Port—Gages. Yarnall-Waring Co., Philadelphia, Pa.
Coltemp—Insulation. Badham Insulation Co., Inc., Birmingham, Ala.
Combi-Matic—Burners. Power-Flame Div., Inc., Grandview, Mo.
Combustioner—Humidifiers. Steel Products Engineering Co., Springfield, O.

Comet—Hoists. Chisholm-Moore Hoist Div., Columbus McKinnon Chain Corp., Tonawanda, N. Y.
Comfort Control—Temperature regulators. Bell & Gossett Co., Morton Grove, Ill.
Comfortaire—Air conditioning units. American Coils Co., Farmingdale, N. J.
Comfort-Flo—Furnaces. Montag Inc., Portland, Ore.
Comfortline—Baseboard radiation. National-U.S. Radiator Corp., Johnstown, Pa.
Comfostat—Thermostats. Johnson Service Co., Milwaukee, Wis.
Cominco—Insulating cement, insulation. United States Mineral Wool Co., Stanhope, N. J.
Commercial-Aire—Heaters. Mammoth Furnace Co., Minneapolis, Minn.
Compact Scotch—Boilers. Titusville Iron Works Co., The, Titusville, Pa.
Compak—Boilers. International Boiler Works Co., The, East Stroudsburg, Pa.
Compar—Plastic tubing. Resistoflex Corp., Roseland, N. J.
Compass—Belting. Goodyear Tire & Rubber Co., Akron, O.
Compound Lever—Hand shears and snips. Bartlett Mfg. Co., Detroit, Mich.
Concavex—Bearings. Shafer Bearing, Div. of Chain Belt Co., Downers Grove, Ill.
Conco—Boiler cleaning compounds, water treatment. Continental Products Co., Euclid, O.
Condenseal—Pipe insulation, tubing. Jarrow Products, Chicago, Ill.
Condenso-Purge—Refrigerant gas purgers. Watkins Co., J.E., Maywood, Ill.
Condor—V-belts, hose, pipe. Raybestos-Manhattan, Inc., Passaic, N. J.
Condo-Vac—Vacuum pumps. Chicago Pump Co., Subsidiary of Food Machinery & Chemical Corp., Chicago, Ill.
Conflex—Clad sheets. General Plate Div., Metals & Controls Corp., Attleboro, Mass.
Coni-Vane—Ventilators. Allen Cooler & Ventilator, Inc., Rochester, Mich.
Connect-O-Matic—Pipe couplings. Wiggins Oil Tool Co., Inc., E. B., Los Angeles, Calif.
Conomanual—Air filters. Continental Air Filters, Inc., Louisville, Ky.
Conomatic—Filters. Continental Air Filters, Inc., Louisville, Ky.
Conomotors—Duct and valve operators. Conoflow Corp., Subsidiary of Walworth Co., Philadelphia, Pa.
Conseco—Water chillers, oil coolers, heat exchangers, filters, headers, water heaters, joints, preheaters, separators, superheaters. Condenser Service & Engineering Co., Inc., Hoboken, N. J.
Conso—Ventilators. Consolidated General Products, Inc., Houston, Tex.
Consolaire—Air Conditioning Units. Remington Air Conditioning Div., Remington Corp., Auburn, N. Y.
Consolidated—Valves. Manning, Maxwell & Moore, Inc., Stratford, Conn.
Constellation Line—Arc welders. Trindl Products, Ltd., Chicago, Ill.
Con-Tac-Ton—Switches. Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.
Continental—Boilers. Boiler Engineering & Supply Co., Phoenixville, Pa.
Continuous Flow—Heating Systems. Webster & Co., Warren, Camden, N. J.
Controlair—Valves. Westinghouse Air Brake Co., Industrial Products Div., Wilmerding, Pa.
Control-by-the-Weather—Heating Control. Webster & Co., Warren, Camden, N. J.
Convector—Humidifiers. Maid-O'-Mist, Inc., Chicago, Ill.
Converto—Roof ventilators. Ammerman Co., Inc., Stillwater, Minn.
Conveyoflo—Conveyors. Builders-Providence Div., B-I-F Industries, Inc., Providence, R. I.
Conveyor—Pulleys and Sheaves. The American Pulley Co., Philadelphia, Pa.
Con-Vol Units—Mixing units for double duct air conditioning units. Thermotank, Inc., Products Div., Detroit, Mich.
Cool-A-Matic—Air conditioning units. Automatic Corp., St. Louis, Mo.
Coolero—Ventilators. Hirschman-Pohle Co., Inc., LeRoy, N.Y.
Coolex—Water treatment. Anderson Chemical Co., Inc., Macon, Ga.
Coolite—Windows. Mississippi Glass Co., St. Louis, Mo.
Coolmaster—Unit coolers. Kramer Trenton Co., Trenton, N. J.
Cool-Mate—Air conditioning units. Weil-McLain Co., Michigan City, Ind.
Coolube—Oil. Warren Refining & Chemical Co., The, Cleveland, O.
Copper Boy—Pipe hangers and supports. Western Wire Products Co., St. Louis, Mo.
Cop-R-Loy—Sheets. Wheeling Corrugating Corp., Wheeling, W. Va.
Cop-R-Loy—Sheets, pipe. Wheeling Steel Corp., Wheeling, W. Va.
Copr-fibre—Insulation. Forty-Eight Insulations, Inc., Aurora, Ill.
Copr-Tube—Fittings. Dresser Mfg. Div., Dresser Industries, Inc., Bradford, Pa.
Copyflex—Blueprint machine. Bruning Co., Inc., Charles, Chicago, Ill.
Cordan—Leather belting and V belts. Sikes Co., S. R., Minneapolis, Minn.
Cor-In Galvanode—Electrolytic devices. Rotometals, San Francisco, Calif.
Cork-Flex—Bases and pad, noise elimination for cooling towers. Vibration Mountings, Inc., Corona, N. Y.
Cork-Rib—Bases and pad. Vibration Mountings, Inc., Corona, N. Y.
Coromat—Insulation. Owens-Corning Fiberglas Corp., Toledo, O.
Corrocote—Coatings. Chemical Coatings & Engineering Co., Media, Pa.
Corrodicide—Water treatment, compounds. Metropolitan Refining Co., Inc., Long Island City, N. Y.
Corrodine—Compound and water treatment. Metropolitan Refining Co., Inc., Long Island City, N. Y.
Corson-Cerveny Micro-Bellows Pump—Feeders. Research Appliance Co., Allison Park, Pa.
Corvez—Protective coatings. Polymer Corp., The, Reading, Pa.
Cottrell—Dust collectors. Western Precipitation Corp., Los Angeles, Calif.
Counterflo—Furnaces. Dravo Corp., Machinery Div., Pittsburgh, Pa.
Covetong—Torches. Lincoln Electric Co., The, Cleveland, O.
Cox—Water heaters. O'Brien Steam Specialty Co., Inc., Syracuse, N. Y.
Coxe—Stokers. Combustion Engineering, Inc., New York, N. Y.
Cozy—Wall heaters. Advance Furnace Co., Wichita, Kans.
Crag—Treatment. Union Carbide Chemicals Co., Div. of Union Carbide Corp., New York, N. Y.
Crescent—Valves. Powell Co., Wm., The, Cincinnati, O.
Cresline—Plastic fittings, pipe, tubing. Crescent Plastics, Inc., Evansville, Ind.
Crest—Water heaters. Day & Night Mfg. Co., LaPuente, Calif.
Crispin—Air eliminators, pipe joints, valves. Multiplex Mfg. Co., Berwick, Pa.
Croloy—Pipe, pipe fittings, flanges, tubes, and tubing. Babcock & Wilcox Co., Tubular Products Div., Beaver Falls, Pa.
Cross-Flo—Dehydrators. Remco, Inc., Zelienople, Pa.
Cryscoat—Protective coatings. Oakite Products, Inc., New York, N. Y.
Crystal—Protective coatings. Barrett Div., Allied Chemical & Dye Corp., New York, N. Y.
Crystolon—Refractories and refractory cement, furnace cement. Norton Co., Worcester, Mass.
Cube-Fill—Insulation. Carney Co., Inc., The, Mankato, Minn.
Cummins—Drills. Oster Mfg. Co., John, Milwaukee, Wis.
Cupralum—Coils and panels. Knapp Mills, Inc., Long Island City, N. Y.
Curtiss—Air conditioning units. Kleer Kleen Mfg. Co., Hayward, Calif.
Cushioned Power—Valves. White-Rogers Co., St. Louis, Mo.
Cutno—Packing. Greene, Tweed & Co., North Wales, Pa.
Cut-O-Matic—Flame cutters. National Cylinder Gas Div. of Chemetron Corp., Chicago, Ill.
Cut Trode—Electrodes. Eutectic Welding Alloys Corp., Flushing, N. Y.
Cyclo-Core—Drills. New England Carbide Tool Co., Inc., Medford, Mass.
Cyclon—Plastic tubing. Munray Products, Div. of Fanner Mfg. Co., Cleveland, O.
Cyclone—Exhaust heads. Wright Austin Co., Detroit, Mich.
Cyclone—Hoists. Chisholm-Moore Hoist Div., Columbus McKinnon Chain Corp., Tonawanda, N. Y.
Cyclonetic—Burners. Webster Engineering Co., Tulsa, Okla.
Cyclothene—Plastic tubing. Munray Products, Div. of Fanner Mfg. Co., Cleveland.
Cyclo-trell—Dust collectors. Research-Cottrell, Inc., Bound Brook, N.J.
Cyclo-Twist—Drills. New England Carbide Tool Co., Inc., Medford, Mass.
Cycoil—Dust Collectors. American Air Filter Co., Inc., Louisville, Ky.
Cylinder Isotron—Refrigerants. American Potash & Chemical Corp., Aerosol & Refrigeration Div., Los Angeles, Calif.
Cylinder Trona—Refrigerants. American Potash & Chemical Corp., Aerosol & Refrigeration Div., Los Angeles, Calif.

DFN—Dehydrators, filters, sight glasses, mufflers, strainers. McIntire Co., The, Livingston, N. J.
D.I.P.—Bends, insulation, conduit, pre-insulated pipe. Durant Insulated Pipe Co., E. Palo Alto, Calif.
D.I.P.—Insulation, conduit, pre-insulated pipe. Durant Insulated Pipe Co., Inc., Williamstown, N. J.
DRC-Blue Circle—Baseboard radiation. Dunkirk Radiator Corp., Dunkirk, N. Y.
DRH Hanger—Absorbers, hangers. Vibration Mountings, Inc., Corona, N. Y.
DX—Softeners. Stover Water Softener Co., St. Charles, Ill.
Dacor—Adsorbers, air filters. Barnebey-Cheney, Inc., Columbus, O.
Daffinaire—Humidifiers HERRmidifier Co., Neffsville, Pa.
Dall—Nozzles. Builders-Providence Div., B-I-F Industries, Inc., Providence, R. I.
Dampermatic—Baseboard radiation. Beacon-Morris Corp., Boston, Mass.
Damperset—Regulators. Elgen Mfg Co., Long Island City, N.Y.
Danco—Filters, pipe fittings, plastic pipe, tubing. Danielson Mfg. Co., Danielson, Conn.
Darcova—Packing. Sims Pump Valve Co., Hoboken, N. J.
Dart—Unions, fittings. Fairbanks Co., The, New York, N. Y.
Day-Nite Acratherm—Thermostats. Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.
Day-Steel—Pulleys and sheaves. Dayton Rubber Co., Dayton, O.
Dean—Cleaners. Pierce Co., Wm. B., The, Buffalo, N. Y.
Debanode—Protective coatings. Debevoise Co., The, Brooklyn, N. Y.
Debecote—Coatings. Debevoise Co., The, Brooklyn, N. Y.
Deep Bed—Air filters. American Air Filter Co., Inc., Louisville, Ky.
Deflectrol—Turning vanes. Barber-Colman Co., Rockford, Ill.
Defrostolator—Hot gas defrosting systems. Tenney Engineering, Inc., Union, N. J.
Dehydrators—Dehumidifiers. Selas Corp. of America, Dresher, Pa.
Dekoron—Protective coatings, wire, tubing. Moore & Co., Samuel, Mantua, O.
Dekoron E-Z—Fittings. Moore & Co., Samuel, Mantua, O.
Delaytrol—Valves. Webster Electric Co., Racine, Wis.
Delta—Steel boilers. Zingham Co., William C., Chicago, Ill.
Deluxe-Line—Plastic tubing. Skyline Industries Sales, Inc., Titusville, Pa.
Demi—Valves. Dahl, G. W., Bristol, R. I.
Demi-Purge—Meters. Dahl, G. W., Bristol, R. I.
Demon Air-Set—Refractories. Plibrico Co., Chicago, Ill.
Densitrol—Indicators. Precision Thermometer & Instrument Co., Philadelphia, Pa.
Densitron—Alarms. Ripley Co., Inc., Middletown, Conn.
Deodorite—Air freshening compounds. Barnebey-Cheney Co., Columbus, O.
Deoterge—Cleaning compounds. Airkem, Inc., New York, N.Y.
Deoxidine—Cleaning compounds. Amchem Products, Inc., Ambler, Pa.
Dereka—Protective coatings. Debevoise Co., The, Brooklyn, N. Y.
Desco—Blower wheels. Denbo Engineering and Sales, Inc., Indianapolis, Ind.
Design-Air—Diffusers. Krueger Air Conditioning Co., Tucson, Ariz.
De-Sta-Co.—Fan housings, pipe clamps, valves. Detroit Stamping Co., Detroit.
Detect-A-Fire—Controls. Fenwal Inc., Ashland, Mass.
Detroit—Traps. Nason Co., Clarkston, Mich.
Dewpointaire—Recorders. Cargocaire Engineering Corp., New York, N. Y.
Dewpointer—Recorders. Cargocaire Engineering Corp., New York, N.Y.
Dexter—Valve reseaters, air separators, steam traps. Leavitt Machine Co., Orange, Mass.
Di-Acro—Benders, brakes, machines, punches, shears. O'Neil-Irwin Mfg. Co., Lake City, Minn.
Dialaire—Air conditioning units. Dialatemp, Inc., St. Louis, Mo.
Dial-A-Speed—Motors. Brown-Brockmeyer Co., Inc., Dayton, O.
Diamalloy—Shears and snips, tools. Diamond Tool & Horseshoe Co., Duluth, Minn.
Diamond—Compounds, enamels and lacquers. Thompson and Co., Oakmont, Pa.
Diamond—Valves. Imperial Brass Mfg. Co., Chicago, Ill.
Diamond—Adsorbers, filters, water treatment. Oshkosh Filter & Softener Co., Oshkosh, Wis.
Diamond H—Switches, thermostats, relays. Hart Mfg. Co., Hartford, Conn.
Diaphlex—Bellows, relays, solenoids, and switches. Cook Electric Co., Chicago, Ill.
Dieselite—Compounds. Metropolitan Refining Co., Inc., Long Island, N. Y.
Diffusaire—Diffusers. Hart & Cooley Mfg. Co., Holland, Mich.
Dilecto—Plastic pipe and tubing. Continental Diamond Fibre Corp., Newark, Del.
Dill Dust Spot Tester—Tester, dust spot. Research Appliance Co., Allison Park, Pa.

Dimetcote—Coatings. Amercoat Corp., South Gate, Calif.

Directrol—Vanes. Register & Grille Mfg. Co., Inc., Brooklyn, N. Y.

Distributor—Radiation. Kehm Corp., The, Chicago, Ill.

Divco—Fittings, devices, coils, pipe and tubing, sheets, plugs, solder, valves. Division Lead Co., Summit, Ill.

Dixigas—Gas welding rod. Atlantic Steel Co., Atlanta, Ga.

Dixisteel—Angles, bars, beams, channels and tees. Atlantic Steel Co., Atlantic, Ga.

Do-All—Drills, tools, electric hammers, plaster groovers. Wodack Electric Tool Corp., Chicago, Ill.

Dominion—Gaskets, packing. Darcoid Co., Inc., New York, N. Y.

Do-Mor-Ad—Saw tools. Pioneer Tool Co., Racine, Wis.

Dorex—Adsorbers. Connor Engineering Corp., Danbury, Conn.

Doro-Chrome—Benders, cutters, tools, wrenches. Duro Metal Products Co., Chicago, Ill.

Double Check—Boiler compounds. Hampton-Cross Co., The, Louisville, Ky.

Double Diamond—Hygrometers, regulators, psychrometers, thermometers. H. B. Instrument Co., Philadelphia, Pa.

Double-Flow—Cooling towers. Marley Co., The, Kansas City, Mo.

Double Retort Stoker—Stokers. Detroit Stoker Co., Monroe, Mich.

Double-Seal—Copper tube fittings. Hays Mfg. Co., Erie, Pa.

Doubleton—Pumps. Allis-Chalmers Mfg. Co., Milwaukee, Wis.

DovRloy—Steel sheets. Reeves Steel & Mfg. Co., Dover, O.

Dowflake—Dehumidifiers. Dow Chemical Co., The, Midland, Mich.

Downmetal—Sheets, tubing. Dow Chemical Co., Midland, Mich.

Downblast—Unit heaters. Westinghouse Electric Corp., Sturtevant Div., Boston, Mass.

Downflow—Unit heaters. McQuay, Inc., Minneapolis, Minn.

Dowtherm—Process heating systems. Dow Chemical Co., The, Midland, Mich.

Draft-A-Justor—Draft controls. Preferred Utilities Mfg. Corp., New York, N. Y.

Draftender—Regulators. Penn Controls, Inc., Goshen, Ind.

Draft King—Caps, vent flue. Wood Mfg. Co., A. R., Luverne, Mich.

Draft Korektor—Controls. Cole-Sewell Engineering Co., St. Paul, Minn.

Draft-O-Stat—Barometric controls. Hotstream Heater Co., Cleveland, O.

Draftrite—Gages. Bacharach Industrial Instrument Co., Pittsburgh, Pa.

Draft Stabilizer—Draft controls. Boston Machine Works, Co., Lynn, Mass.

Dragnet—Leak detectors, testers. Universal Controls Corp., Dallas, Tex.

Dragon—Vacuum cleaners, dust collectors. Empire Chemical Products Co., Newark, N.J.

Drainator—Traps. Coe Mfg. Co., Painesville, O.

Drain-Dri—Sump pumps. Yeomans Bros. Co., Melrose Park, Ill.

Draintrol—Traps. Schaub Engineering Co., Fred H., Chicago, Ill.

Dri-Acid—Chemical treatment. Allen Co., Robert G., Mechanicsville, N.Y.

Dricon—Condensers. Recold Corp., Los Angeles, Calif.

Dri-Fan—Condensers, cooling towers. Recold Corp., Los Angeles, Calif.

Drifreeze—Dehydrant and acid neutralizer, dehydrators. Berna Corp., Garwood, N. J.

Driline—Dehumidifiers. Desomatic Products, Inc., Falls Church, Va.

Dril-Tec—Gas welding rods. Eutectic Welding Alloys Corp., Flushing, N.Y.

Dri-Pipe—Insulation. Mystik Adhesive Products, Inc., Chicago, Ill.

Drive-IT—Hangers and supports, fasteners. Omark Industries Inc., Portland, Ore.

Drumulator—Dryers. Jeffrey Mfg. Co., Columbus, O.

Drycid—Treatment. Oakite Products, Inc., New York, N. Y.

Dry-Eye—Dehydrators. Ansul Chemical Co., Refrigeration Div., Marinette, Wis.

Dry-Ex—Water chillers. Acme Industries, Inc., Jackson, Mich.

Dryfol—Insulation. Reflectal Corp. Subsid., Borg-Warner Corp., Chicago, Ill.

Drygalv—Protective coatings. American Solder & Flux Co., Philadelphia, Pa.

Dry-Ice—Refrigerants. Pure Carbonic Co., Div. of Air Reduction Co., Inc., New York.

Drymaster—Dehumidifiers. Dryomatic Corp., Alexandria, Va.

Dryvin—Expansion bolts. Star Expansion Industries Corp., Mountainville, N.Y.

Dual Adjusta-Flo—Valves. Sullivan Valve & Engineering Co., Butte, Mont.

Dualaire—Dust collectors. Western Precipitation Corp., Los Angeles, Calif.

Dualarc—Arc Welders. Electric Arc, Inc., Newark, N. J.

Dual-Clone—Dust collectors. Day Co., The, Minneapolis, Minn.

Dual-Dial—Gages. Rochester Mfg. Co., Inc., Rochester, N. Y.

Dual-A-Fire—Burners. Automatic Corp., St. Louis, Mo.

Dualene—Fuel oil treatment. Allen Co., Robert G., Mechanicsville, N. Y.

Dualsteel—Unions. Rockwood Sprinkler Co., Worcester, Mass.

Dualvector—Air conditioning units. Kritzer Radiant Coils, Inc., Batavia, Ill.

Dualvent—Roof ventilators. Octagon Ventilator Co., Chicago, Ill.

Dubl-Dome—Heat insulating windows. Pam Co., The, Portland, Ore.

Duboth—Boiler water treatment, compounds. Metropolitan Refining Co., Inc., Long Island City, N. Y.

Duclone—Dust collectors. Ducon Co., The, Mineola, N. Y.

Duco—Enamels and lacquers. du Pont de Nemours & Co., E. I., Finishes Div., Wilmington, Del.

Ductak—Adhesives. Cain Mfg. Co., Birmingham, Ala.

Ductatherm—Thermostats. Mercoid Corp., The, Chicago, Ill.

Ductite—Tape. Johns-Manville, New York, N.Y.

Ducturns—Vanes. Tuttle & Bailey, Div. of Allied Thermal Corp., New Britain, Conn.

Ductype—Fans. South Bend Air Products, Inc., South Bend, Ind.

Dulux—Enamels and lacquers. du Pont de Nemours & Co., E. I., Finishes Div., Wilmington, Del.

Dum Dum—Sealing compounds, protective coatings. Arco Co., The, Cleveland, O.

Duo Blo—Air heaters. American Furnace Co., St. Louis, Mo.

Duo Equalizing HypTor—Pipe joints. Zallea Brothers, Wilmington, Del.

Duonetic—Gas and oil burners. Webster Engineering Co., Tulsa, Okla.

Duo-Stat—Heating systems, thermostats. Johnson Service Co., Milwaukee, Wis.

Duotrol—Regulators, indicators, switches. Automatic Control Co., St. Paul, Minn.

Duplex—Insulation. Keasbey & Mattison Co., Ambler, Pa.

Duplex—Pipe cutting machines. Bignall & Keeler Div., John Ramming Machine Co., St. Louis, Mo.

Duplex Twin Rail—Bases and pads. Korfund Co., Inc., Long Island City, N. Y.

Durable—Pipe flanges and pipe fittings. Nuclear and Power Equipment Corp., S. San Francisco, Calif.

DuraBilt—Registers. Auer Register Co., Cleveland, O.

Duracor—Ducts and duct fittings, hoods, plastic sheets for ducts and hoods. Ceilcote, Inc., Cleveland, O.

Duradiant—Burners. Selas Corp. of America, Dresher, Pa.

Dura-Flex—Registers. Auer Register Co., Cleveland, O.

Duraflex—Stokers. Canton Stoker Corp., Canton, O.

Dura-Line—Registers. Auer Register Co., Cleveland, O.

Duramesh—Pipe wrap. L.O.F. Glass Fibers Co., Toledo, O.

Duranite—Enamels and lacquers. Glidden Co., Nubian Div., Chicago, Ill.

Duratape—Pipe wrap. L.O.F. Glass Fibers Co., Toledo, O.

Durco—Fans, fittings, pipe, valves. Duriron Co., Inc., Dayton, O.

Durcopump—Fans, fittings, heaters, exchangers, nozzles, pumps, pipe, valves. Duriron Co., Inc., Dayton, O.

Durethene—Vapor barriers. Koppers Co., Inc., Pittsburgh, Pa.

Durex—Bearings. Moraine Products Div., General Motors Corp., Dayton, O.

Durichlor—Fans, fittings, pipe, valves. Duriron Co., Inc., Dayton, O.

Duridine—Protective coatings. Amchem Products, Inc., Ambler, Pa.

Durimet—Fans, fittings, heaters, exchangers, nozzles, pumps, pipe, valves. Duriron Co., Inc., Dayton, O.

Duro-Blade—Regulators. Duro-Dyne Corp., Farmingdale, L. I., N. Y.

Durolite—Insulation. Insulite Div., Minnesota & Ontario Paper Co., Minneapolis, Minn.

Duro-Metal-FAB—Duct connections, ducts and duct fittings. Duro-Dyne Corp., Farmingdale, L. I., N. Y.

Durospead—Heads. Grinnell Co., Inc., Providence, R. I.

Duro-Vane-Rail—Vanes, air scoops. Duro-Dyne Corp., Farmingdale, L. I., N. Y.

Dur-X—Plastic fittings and pipes. Franklin Plastics, Inc., Franklin, Pa.

Dustay—Filters. Air-Maze Corp., Cleveland, O.

Dust King—Dust collectors. Dust Filter Co., Chicago, Ill.

Dustkop—Dust collectors. Aget Mfg. Co., Adrian, Mich.

Dust-Magnet—Filters. Stoddard Industries, Inc., Chicago, Ill.

Dust Master—Dust collectors. Bannister Co., Inc., Cambridge, Mass.

Dustronic—Air filters. Radex Corp., Chicago, Ill.

Dust-Stop—Air Filters. Owens-Corning Fiberglas Corp., Toledo, O.

Dustube—Dust collectors. Wheelabrator Corp., Mishawaka, Ind.

Dutch Boy—Solder, protective coatings, enamels and lacquers. National Lead Co., New York, N. Y.

Duxbak—Leather belting and packing. Schieren Co., Chas. A., Camden, N. J.

Dux-Sulation—Insulation. Grant Wilson, Inc., Chicago, Ill.

Dy-Chek—Dye penetrant. Turco Products, Inc., Los Angeles, Calif.

Dyanfan—Roof ventilators. Penn Ventilator Co., Philadelphia, Pa.

Dycon—Air Filters. Continental Air Filters, Inc., Louisville, Ky.

Dylan—Plastics, powders and resins. Koppers Co., Inc., Pittsburgh, Pa.

Dylene—Plastics, powders and resins. Koppers Co., Inc., Pittsburgh, Pa.

Dylite—Plastics, powders and resins. Koppers Co., Inc., Pittsburgh, Pa.

Dynaflow—Fans. South Bend Air Products, Inc., South Bend, Ind.

Dyna-Line—Electric motors, reducers. Brown-Brockmeyer Co., Inc., Dayton, O.

Dyn-A-Matic—Water softeners. Modern Div., George Getz Corp., Freeport, Ill.

Dyne-Aire—Heaters. American Foundry & Furnace Co., Bloomington, Ill.

Dynetic—Gas burners. Webster Engineering Co., Tulsa, Okla.

Dynetric—Balancing equipment. Gisholt Machine Co., Madison, Wis.

Dyno-Mite—Drills. Millers Fall Co., Greenfield, Mass.

E B Weld Insert—Rings. Arcos Corp., The, Philadelphia, Pa.

E-C—V belts. Goodyear Tire & Rubber Co., Akron, O.

E C & M—Motor controllers and starters, switches. Electric Controller & Mfg. Co., Div. of Square D Co., Cleveland, O.

EFM-Fire Jet—Conveyors. Electric Furnace-Man, Inc., Emmaus, Pa.

EKCCO—Fans. E. K. Campbell Co., Kansas City, Mo.

EMD—Blowers. L. J. Wing Mfg. Co., Linden, N. J.

EMS—Compounds, destroyers, feeders, water filters, scale removal, water softeners, treatment. Smith Chemical Co., E. W., La Puente, Calif.

ES—Sheets. Eastern Stainless Steel Corp., Baltimore, Md.

E-Z—Registers, regulators, hangers and supports. Acme Mfg. Co., Philadelphia, Pa.

E.Z.—Hangers or brackets, Inserts. Healey Ruff Co., St. Paul, Minn.

E-Z—Cutters. Collins Machinery Corp., Los Angeles, Calif.

E-Z—Soot destroyers. Normal Chemical Co., St. Paul, Minn.

EZ Code—Electric wire. Westline Products Div. of Western Lithograph Co., Los Angeles, Calif.

E-Z Flex—Pipe joints. Beacon Brass Co., Waltham, Mass.

E-Z-On—Regulators. Gerett Corp., M. A., Milwaukee, Wis.

E-Z See—Glasses. Remco, Inc., Zelienople, Pa.

E-Z-Wash—Air filters. Continental Air Filters, Inc., Louisville, Ky.

Easy-Flo—Solder. Handy & Harman, New York, N. Y.

Easy-Wrap—Protective coatings, pipe and tubing insulation, pipe wrap. Rhopac, Inc., Skokie, Ill.

Ebko—Conduits, exchangers, pipe, systems. Kaiser Co., E. B., Glenview, Ill.

Econ-O-Fab—Duct connections, ducts and duct fittings. Duro-Dyne Corp., Farmingdale, Long Island, N. Y.

Econoflow—Regulators. Smith Welding Equipment Corp., Minneapolis, Minn.

Econ-O-Matic—Motor bases. American Pulley Co., The, Philadelphia, Pa.

Economite—Commercial and industrial gas burners. Mid-Continent Metal Products Co., Chicago, Ill.

Economizer—Nozzles. Bahnson Co., Winston-Salem, N. C.

Economo—Burners. Dalzen Mfg. Co., St. Clair, Mich.

Economy—Unit ventilators. Arex Co., Chicago, Ill.

Econostat—Heating systems. Barber-Coleman Co., Rockford, Ill.

Econovent—Ventilators. Western Engineering & Mfg. Co., Venice, Calif.

Econo-Watt—Electric motors. Redmond Co., Inc., Owosso, Mich.

EDCO—Heaters. Cauhorn Distributing Co., Detroit, Mich.

Edgeseal—Air filters. Wilson & Co., Inc., Chicago, Ill.

Edgetallic—Gaskets. Darcoid Co., Inc., New York, N. Y.

Effico—Ventilators. Hirschman-Pohle Co., Inc., LeRoy, N. Y.

Eisen-Heiss—Protective coatings, enamels and lacquers, high temperature paint. Master Mechanics Co., Cleveland, O.

Ejectopump—Pumps. Ferro Corp., Cleveland, O.

Elastic Metallic—Packing. Chesterton Co., A. W., Everett, Mass.

Elastic Porcelain—Tank linings. Porce-Lin Tank Lining Co., Detroit, Mich.

Elasto Rib—Vibration isolating bases. Korfund Co., Inc., Long Island City, N. Y.

Elaterite—Coatings. Ohmlac Paint & Refining Co., Inc., Long Island City, N. Y.

Elbolets—Fittings. Bonney Forge & Tool Wks., Allentown, Pa.

Electric—Pipe cleaning machines. Spartan Tool Co., Chicago, Ill.

Electric Filter Watchman—Gages. Herbusch Corp., The, St. Louis, Mo.

Electric Trimline Baseboard—Radiators. Vulcan Radiator Co., Hartford, Conn.

Electrifugal Pumps—Centrifugal pumps. Allis-Chalmers Mfg. Co., Milwaukee, Wis.

Electro-Cell—Air filters. American Air Filter Co., Inc., Louisville, Ky.

Electroflo—Valves. Hays Mfg. Co., Erie, Pa.

Electro-Hot—Heaters. Red Spot Electric Co., Tacoma, Wash.

Electro-Klean—Air filters. American Air Filter Co., Inc., Louisville, Ky.

Electro-Matic—Air filters. American Air Filter Co., Inc., Louisville, Ky.

Electromaze—Air filters. Air-Maze Corp., Cleveland, O.

Electro-Mesurflo—Valves. Hays Mfg. Co., Erie, Pa.

Electro-Mist—Air filters. American Air Filter Co., Inc., Louisville, Ky.

Electromite—Valves. Hays Mfg. Co., Erie, Pa.

Electro-Pl—Air filters. American Air Filter Co., Inc., Louisville, Ky.

ElectroProbe—Heating boiler cut-offs, indicators, switches. Instruments, Inc., Tulsa, Okla.

Electro-Rod—Pipe cleaning machines. Spartan Tool Co., Chicago, Ill.

Electro-Sheet—Sheets. American Brass Co., Waterbury, Conn.

Electroweld—Welders. Electric Arc, Inc., Newark, N. J.

Electro-Wind—Ventilators. Allen Cooler & Ventilator Inc., Rochester, Minn.

Electrinete—Stainless steel tubing and pipe, tubing benders. Republic Steel Corp., Cleveland, O.

Elemenex—Electrical capacitors. Line Material Industries, McGraw-Edison Co., Milwaukee, Wis.

Elgex—Steam system treatment. Elgin Softener Corp., Elgin, Ill.

Elgin—Arc welders. Borm Mfg. Co., Elgin, Ill.

Elgin—Louvers and shutters. Elgo Shutter & Mfg. Co., Detroit, Mich.

ElKoloy—Welders. P. R. Mallory & Co., Inc., Indianapolis, Ind.

ELKonite—Welders. P. R. Mallory & Co., Inc., Indianapolis, Ind.

ELKonium—Welders. P. R. Mallory & Co., Inc., Indianapolis, Ind.

Ell-Jac—Pipe covering protectors. Childers Mfg. Co., Houston, Tex.

Elm—Dampers. Elgo Shutter & Mfg. Co., Detroit, Mich.

Elno—Electrolytic devices for preventing corrosion. Patrol Valve Co., The, Cleveland, O.

Emd-Com—Blowers. Wing Mfg. Co., L. J., Div. of Aero Supply Mfg. Co., Inc., Linden, N. J.

Emline—Tank linings. Emjay Maintenance Engineers, Rutherford, N. J.

Empire—Refractories and refractory cement. Green Fire Brick Co., A. P., Mexico, Mo.

Empire Mallets—Tools. Greene, Tweed & Co., North Wales, Pa.

Enamelite—Coatings. Presstite-Keystone Engineering Products Co., A Div. of American-Marietta Co., St. Louis, Mo.

Enco—Burners, registers, fueloil units. Engineer Co., New York, N. Y.

Endo—Air dampers. Elgo Shutter & Mfg. Co., Detroit, Mich.

Enduro—Hose. Continental Rubber Wks., Erie, Pa.

Enduro—Steel tubing, pipe. Republic Steel Corp., Cleveland, O.

Enduro#300—Unions. Jefferson Union Co., Inc., Lexington, Mass.

Entrained Combustion—Gas Burners. Mettler Co., Inc., The, Div. of Eclipse Fuel Engineering Co., Rockford, Ill.

Equalizer—Deaerators, feeders, systems, traps. Acker Corp., Meridian, Miss.

Equatemp—Balancing valves. Ohio Brass Co., Mansfield, O.

Equa-Trol—Valves, manifolds and headers. Panel Heat, Inc., Copiague, N. Y.

Equavalve—Pipe fittings & Valves. Panel Heat, Inc., Copiague, N. Y.

Eraydo—Zinc sheets. Illinois Zinc Co., Div. of Hydrometals, Inc., Chicago, Ill.

Ermeto—Steel tube fittings. Imperial Brass Mfg. Co., Chicago, Ill.

Ermeto—Fittings. Weatherhead Co., The, Ft. Wayne Div., Ft. Wayne, Ind.

Esco—Fittings, flanges, nipples, pipe, exchangers. Electric Steel Foundry Co., Portland, Ore.

Esco Spuncast—Pipe, tubing. Electric Steel Foundry Co., Portland, Ore.

Escon—Electrical relays. Electro-Switch & Controls, Inc., Culver City, Calif.

Esso—Heaters, air conditioning units. Gilbert & Barker Mfg. Co., West Springfield, Mass.

Esso Bond—Refractories. Ramtite Co., The, Chicago, Ill.

Eternium—Protective coatings. Barrett Div., Allied Chemical & Dye Corp., New York, N. Y.

Eutec-Arc—Arc welders. Eutectic Welding Alloys Corp., Flushing, N. Y.

EutecBor—Gas welding rods. Eutectic Welding Alloys Corp., Flushing, N. Y.

Eutechrom—Welding electrodes, gas welding rod. Eutectic Welding Alloys Corp., Flushing, N. Y

EuteCushion-Shim—Solder. Eutectic Welding Alloys Corp., Flushing, N. Y.

Eutec Rod—Rods, solder. Eutectic Welding Alloys Corp., Flushing, N. Y.

EutecSol—Welding compounds. Eutectic Welding Alloys Corp., Flushing, N. Y.

Eutec-Tin-Weld—Solder. Eutectic Welding Alloys Corp., Flushing, N. Y.

Eutectofilm—Gas welding rod. Eutectic Welding Alloys Corp., Flushing, N. Y.

Eutecto-Mask—Compounds. Eutectic Welding Alloys Corp., Flushing, N. Y.

Eutector Flux—Welding compounds. Eutectic Welding Alloys Corp., Flushing, N. Y.

EutecTorch—Torches, welding and cutting apparatus. Eutectic Welding Alloys Corp., Flushing, N. Y.

EutecTrode—Welding electrodes. Eutectic Welding Alloys Corp., Flushing, N. Y.

EVACTOR—Heaters and pumps. Croll-Reynolds Engineering Co., Inc., New York, N. Y.

Evanaction—Valves. Taylor Instrument Companies, Rochester, N. Y.

Evenflo—Air filters. Hadley Products Co., Inc., Marietta, O.

Ever Clean Boiler Process—Compounds. North American Mogul Products Co., The, Cleveland, O.

Everbrite—Paint. Warren Refining & Chemical Co., The, Cleveland, O.

Everjet—Coatings. Barrett Div., Allied Chemical & Dye Corp., New York, N. Y.

Ever Ready—Holders and files. Geneva Mfg. Co., South Elgin, Ill.

Evolene—Treatment. Berna Corp., Garwood, N. J.

Exbrook-oil—Boilers. American Radiator & Standard Sanitary Corp., Plumbing & Heating Div., New York, N. Y.

Excel 250#—Unions. Jefferson Union Co., Inc., Lexington, Mass.

ExFlux—Welding compounds. Eutectic Welding Alloys Corp., Flushing, N. Y.

Exhaust-O-Vent—Exhaust fittings. Engwald Corp., The, Inwood, Long Island, N. Y.

Exon—Plastics, powders and resins. Chemical Sales Div., Firestone Plastics Co., Pottstown, Pa.

Expand-R-Strap—Fasteners. Gerrard & Co., A. J., Melrose Park, Ill.

Expelsor—Ejectors. Yeomans Bros. Co., Melrose Park, Ill.

Explosimeter—Leak detectors. Mine Safety Appliances Co., Pittsburgh, Pa.

External—Water heaters. Taco Heaters, Inc., Cranston, R. I.

Extra Dry Esotoo—Refrigerants. Virginia Smelting Co., West Norfolk, Va.

Eye-Hye—Indicators. Reliance Gauge Column Co., Cleveland, O.

Ezkleen—Filters. Research Products Corp., Madison, Wis.

Ezy-Kleen—Strainers. Blackmer Pump Co., Grand Rapids, Mich.

F & E—Stokers, and incinerators. Flynn & Emrich Co., Baltimore, Md.

FS—Bellows. Fulton Sylphon Div., Robertshaw-Fulton Controls Co., Knoxville, Tenn.

Fab-Ric—Connections. Cain Mfg. Co., Birmingham, Ala.

Fabri-Flex—Bases and pads, noise elimination for cooling towers. Vibration Mountings, Inc., Corona, N. Y.

Fabrikated—Grilles, registers. Independent Register Co., Cleveland, O.

Faceweld—Electrodes. Lincoln Electric Co., The, Cleveland, O.

Fairco Braze—Valves. Fairbanks Co., The, New York, N. Y.

Fan-Air—Gas burners. Mettler Co., Inc., The, Div. of Eclipse Fuel Engineering Co., Rockford, Ill.

Fanaire—Diffusers, registers. Auer Register Co., Cleveland, O.

Fandaire—Condensers, finned pipe, finned tubing, air conditioning units. F5 Air Conditioning Corp., Tulsa, Okla.

Fanjet—Systems. Muellermist Irrigation Co., Maywood, Ill.

Fanmix—Burners. Coppus Engineering Corp., Worcester, Mass.

Far-Air—Air conditioning units, filters, humidifiers. Farr Co., Los Angeles, Calif.

Farragut—Packing. Darcoid Co., Inc., New York, N. Y.

FasFill—Connectors. Scully Signal Co., Melrose, Mass.

Fashion—Thermostats. White-Rodgers Co., St. Louis, Mo.

Faslite—Gas pilots. Scully Signal Co., Melrose, Mass.

Fastak—Adhesives. Cain Mfg. Co., Birmingham, Ala.

Fast's—Couplings. Koppers Company, Inc., Metal Products Div., Baltimore, Md.

FauceHot—Heaters. Bastian-Morley Co., Inc., LaPorte, Ind.

Favorite—Ratchet wrenches. Greene, Tweed & Co., North Wales, Pa.

Featherfin—Heating and cooling surface, unit coolers. Wing Mfg. Co., L. J., Div. of Aero Supply Mfg. Co., Inc., Linden, N. J.

Featherweight—Insulation. Keasbey & Mattison Co., Ambler, Pa.

Featherweight—Unit heaters. Wing Mfg. Co., L. J., Div. of Aero Supply Mfg. Co., Inc., Linden, N. J.

Featherweight Champ—Pipe cutting and threading machines, pipe vise stands. Oster Mfg. Co., Wickliffe, O.

Federal—Filters. Wood Mfg. Co., A. R., Luverne, Minn.

Feedrator—Chemical feeders. Fischer & Porter Co., Hatboro, Pa.

Fein—Pipe cutting machines, electric saws. Krieg, Inc., Victor J., New York, N. Y.

Fel-Pro—Gaskets, packing. Felt Products Mfg. Co., Skokie, Ill.

Felt Grip—Bases and pads. Vibration Mountings, Inc., Corona, N. Y.

Fenn's Rotary—Ventilators. Waverly Heating Supply Co., Beverly, Mass.

Ferrenewo—Valves. Lunkenheimer Co., Cincinnati, O.

Ferro-Therm—Insulation. American Flange & Mfg. Co., Inc., New York, N. Y.

Ferroweld—Electrodes. Lincoln Electric Co., Cleveland, O.

Fibercast—Plastic pipe. Youngstown Sheet & Tube Co., Youngstown, O.

Fiberglas—Insulation. Owens-Corning Fiberglas Corp., Toledo, O.

Fiber Glass—Insulation. Pittsburgh Plate Glass Co., Pittsburgh, Pa.

Fiberlite—Insulation. Insulite Co., Minneapolis, Minn.

Fibrocel—Pipe insulation. Johns-Manville, New York, N. Y.

Fieldlink—Fittings. LaFavorite Rubber Mfg. Co., Hawthorne, N. J.

Filterdown—Filters. American Air Filter Co., Inc., Louisville, Ky.

Fil-Thru—Gages. Applied Mechanics Co., Boston, Mass.

Filtr-Aire—Filters. Peden Equipment Co., Houston, Tex.

Filtrex—Filters. Drico Industrial Corp., Passaic, N. J.

Filt-R-Gard—Gages. Bacharach Industrial Instrument Co., Pittsburgh, Pa.

Fine-Line—Baseboard radiation. Slant-Fin Radiator Corp., Richmond Hill, N. Y.

Fin-Flex—Registers. Auer Register Co., Cleveland, O.

Finger Strap—Fasteners. Gerrard & Co., A. J., Melrose Park, Ill.

Finnflex—Bases, hangers. Finn & Co., Inc., T. R., Hawthorne, N. J.

Fin Ray—Radiation. National-U.S. Radiator Corp., Johnstown, Pa.

Fin Vector—Radiation. Dunham-Bush, Inc., West Hartford, Conn.

Fire Belle—Alarms. Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.

Fire-Chex—Vapor barriers. Carey Mfg. Co., Philip, Cincinnati, O.

Firecrete—Refractories. Johns-Manville, New York, N. Y.

Firefoil—Insulating panel. Carey Mfg. Co., Philip, Lockland, Cincinnati, O.

Fire Fybr Felt—Insulation. Baldwin-Hill Co., Trenton, N. J.

Fireite—Furnace cement, refractories. Johns-Manville, New York, N. Y.

Fire Jet—Stokers. Electric Furnace-Man, Inc., Emmaus, Pa.

Fireye—Alarms, flame failure controls, recorders, combustion control systems, indicators, recorder-controllers, valves. Electronics Corp. of America, Cambridge, Mass.

Firite—Stokers. Hoffman Combustion Engineering Co., Lincoln Park, Mich.

Firma—Ventilators. Hirschman-Pohle Co., Inc., LeRoy, N. Y.

Firomatic—Filters, cut-offs, links, switches, valves. Morse-Smith-Morse, Inc., Watertown, Mass.

Fit-All—Pipe hangers and supports. Western Wire Products Co., St. Louis, Mo.

Fitrite—Tools, roof ventilators. Levow, David, Brooklyn, N. Y.
Fixt-Aire—Grilles, registers. Hart & Cooley Mfg. Co., Holland, Mich.
Flametrol—Controls. Barber-Colman Co., Rockford, Ill.
Flange-Jacks—Separators. Williams & Co., J. H., Buffalo, N. Y.
Flat-Belt—Pulleys and sheaves. The American Pulley Co., Philadelphia, Pa.
Flaw-Findr—Dye penetrant. Met-L-Chek Co., Los Angeles, Calif.
Fleet Line—Motors. Brown-Brockmeyer Co., Inc., Dayton, O.
Fleetweld—Welding electrodes. Lincoln Electric Co., Cleveland, O.
Flex—Nipples. Techniflex Corp., Port Jervis, N. Y.
Flexarc—Arc Welders. Westinghouse Electric Corp., Pittsburgh, Pa.
Flexazone—Air conditioning units. National-U.S. Radiator Corp., Johnstown, Pa.
Flexazone—Air conditioning units. Drayer-Hanson, Div. of National-U.S. Radiator Corp., Los Angeles, Calif.
Flexcell—Bases and pads. Celotex Corp., The, Chicago, Ill.
Flexfast—Hose clamps. Flexible Tubing Corp., Guilford, Conn.
Flexfelt—Insulation. National Gypsum Co., Buffalo, N. Y.
Flexflyte—Ducts and duct fittings, hose, tubing. Flexible Tubing Corp., Guilford, Conn.
Flex-Hose—Flexible hose. Korfund Co., Inc., Long Island City, N. Y.
Flexiblac—Protective coatings. Samuel Cabot, Inc., Boston, Mass.
Flexibond—Protective coatings. Continental Products Co., Euclid, O.
Flexi-Duct—Connections. Grant Wilson, Inc., Chicago, Ill.
Flexidur—Nozzles. Bahnson Co., Winston-Salem, N. C.
Flexidyne—Couplings, drives. Dodge Mfg. Corp., Mishawaka, Ind.
Flexiflo—Diffusers. Universal Diffuser Corp., Tuckahoe, N. Y.
Flex-I-liner—Rotary pumps. Vanton Pump & Equipment Corp., Hillside, N. J.
Flexitite—Gate valves. Ohio Brass Co., Mansfield, O.
Flexloc—Lock nuts. Standard Pressed Steel Co., Jenkintown, Pa.
FLEXODISC—Expansion joints. Croll-Reynolds Engineering Co., Inc., New York, N. Y.
FLEXOLEED—Expansion joints. Croll-Reynolds Engineering Co., Inc., New York.
Flexon—Bellows, pipe hangers and supports, steel tubing, pipe joints, ducts and duct fittings. Flexonics Corp., Maywood, Ill.
Flexon Expansion Compensator—Pipe joints. Flexonics Corp., Maywood, Ill.
Flexpansion—Fittings and hose. Techniflex Corp., Port Jervis, N. Y.
Flexpipe—Absorbers. American Metal Hose Div., American Brass Co., The, Waterbury, Conn.
Flex Plates—Bases and pads, noise elimination for cooling towers. Vibration Mountings, Inc., Corona, N. Y.
Flex-Seal—Pumps. Bart Mfg. Corp., Belleville, N. J.
Flextan—Packing. Chicago Belting Div., Chicago-Allis Mfg. Corp., Chicago, Ill.
Flex-Tube—Analyzers, gages, kits, meters, testers, manometers, switches, pitot tubes. Dwyer Mfg. Co., F. W., Michigan City, Ind.
Flex Valve—Valves. Farris Flexible Valve Corp., Palisades Park, N. J.
Flexzorber—Hose. Finn & Company, Inc., T. R., Hawthorne, N. J.
Flex-Zorber—Adsorbers. Saussé & Co., M.W., Los Angeles, Calif.
Flikit—Ratchet wrenches. Custanite Corp., Brooklyn, N. Y.
Flo—Dehydrant and acid neutralizer, for refrigerating systems. Allin Mfg. Co., Chicago, Ill.
Float-O-Matic—Pumps. March Mfg. Co., Inc., Skokie, Ill.
Floatrol—Switches, regulators. Automatic Control Co., St. Paul, Minn.
Flochek—Valves. Taco Heaters, Inc., Cranston, R. I.
Flo-Coater—Booths. Griffin & Co., Louisville, Ky.
Flocold—Unit coolers. Drayer-Hanson, Div. of National-U.S. Radiator Corp., Los Angeles, Calif.
Floguide—Flow meters. Fischer & Porter Co., Hatboro, Pa.
Flo-Klean—Filters. Cuno Engineering Corp., Meriden, Conn.
Floline—Tubing. Nylon Moulding Corp., Garwood, N. J.
Flo-Line—Valves. Hanna Engineering Wks., Chicago, Ill.
Flo-Master—Louvers and shutters. Acme Engineering & Mfg. Corp., Muskogee, Okla.
Flo-Matic—Conveyors, stokers. American Coal Burner and Wood Stoker Corp., Chicago.
Floor-Level—Radiation. Rempe Co., Chicago.
Floorline—Radiation. National-U.S. Radiator Corp., Johnstown, Pa.
Flo-Pilot—Valves. Hanna Engineering Wks., Chicago, Ill.
Florite—Air velocity meters, and anemometers. Bacharach Industrial Instrument Co., Pittsburgh, Pa.
Florite Desiccant—Dehumidifiers, dehydrators. Floridin Co., Tallahassee, Fla.
Flo-Scope—Meters. Selas Corp. of America, Dresher, Pa.
Flo-Set—Valves. Hanna Engineering Wks., Chicago, Ill.
Flotectic Flux—Welding compounds. Eutectic Welding Alloys Corp., Flushing, N. Y.
Flo-Tee—Fittings. Panel Heat, Inc., Copiague, N. Y.
Flotrol—Humidifiers, valves. Cleveland Humidifier Co., Cleveland, O.
Flo-Tube—Conveyors. Canton Stoker Corp., Canton, O.
Flo-watch—Flow meters. Builders-Providence Div., B-I-F Industries, Inc., Providence, R. I.
Floway—Turbine pumps. Fiese & Firstenberger Mfg., Inc., Fresno, Calif.
Flow-Cold—Water chillers, compressors, coolers and towers. Acme Industries, Inc., Jackson, Mich.
Flowmaster—Pumps. Marco Development Co., Inc., Wilmington, Del.
Flow-Mixer—Cooling towers, condensers. Acme Industries, Inc., Jackson, Mich.
Flow-Pac—Chillers, compressors. Acme Industries, Inc., Jackson, Mich.
Flowrator—Meters, systems. Fischer & Porter Co., Hatboro, Pa.
Flowrite—Valves. Powers Regulator Co., Skokie, Ill.
Flow-Temp—Air conditioning Units. Acme Industries, Inc., Jackson, Mich.
Flow-Therm—Chillers, compressors, coolers. Acme Industries, Inc., Jackson, Mich.
Flow Tube—Meters. Foster Engineering Co., Union, N. J.
Fluid Fortress—Fittings. Flodar Corp., Cleveland, O.
Fluid Joists—Coils. Fricke, Fred J., Albuquerque, N. M.
Fluidyne—Pumps. Peerless Pump Div., Food Machinery and Chemical Corp., Los Angeles, Calif.
Fluid-Tite—Pipe, asbestos. Keasbey & Mattison Co., Ambler, Pa.
Fluoroflex—Tubing. Resistoflex Corp., Roseland, N. J.
Fluoroseal—Cement and compounds. Industrial Plastic Fabricators, Norwood, Mass.
Flush-Kleen—Sewage ejectors and pumps. Chicago Pump Co., Subsidiary of Food Machinery & Chemical Corp., Chicago, Ill.
Flux-'N-Solder—Solder. Johnson Mfg. Co., Inc., Mt. Vernon, Ia.
Foamglas—Insulation. Pittsburgh Corning Corp., Pittsburgh, Pa.
Foamsil—Insulation. Pittsburgh Corning Corp., Pittsburgh, Pa.
Force-Flo—Circulators, fittings, heaters, regulators, tanks. Kehm Corp., The, Chicago.
Force-Flo—Unit heaters. Trane Co., The, LaCrosse, Wis.
Form-A-Gasket—Cement and compounds. Permatex Co., Inc., Long Island, N. Y.
Form-A-Jig—Compounds. Eutectic Welding Alloys Corp., Flushing, N. Y.
Formet—Water treatment. Perolin Co., Inc., New York, N. Y.
Formula 59—Water treatment. Oakite Products, Inc., New York, N.Y.
Fosco—Water heaters. Schoedinger, Inc., F. O., Columbus, O.
4A Vichrome—Tank linings. Interchemical Corp., Finishes Div., Newark, N. J.
4-Star—Adhesive tape. Johns-Manville, New York, N. Y.
Fracto Crete—Refractories. Ramtite Co., The, Chicago Ill.
Francite—Cement, refractories and refractory cement. France Refractories Co., J. H., Snow Shoe, Pa.
Francke—Flexible couplings. Waldron Corp., John, New Brunswick, N. J.
Franco-Therm—Cement, insulating. France Refractories Co., J. H., Snow Shoe, Pa.
Franset—Cement, refractories and refractory cement. France Refractories Co., J. H., Snow Shoe, Pa.
Franset with Super Bond—Cement, and refractories and refractory cement. France Refractories Co., J.H., Snow Shoe, Pa.
Free-Aire—Air conditioning units, heaters. Kehm Corp., The, Chicago, Ill.
Free-Flow—Ventilators. Burt Mfg. Co., Akron, O.
Fre-Flow—Strainers. Fisher Governor, Marshalltown, Ia.
Frigid Arc—Welding electrodes. Eutectic Welding Alloys Corp., Flushing, N.Y.
Frigistat—Thermostats. Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.
Frogalloy—Electrodes. McKay Co., Pittsburgh, Pa.
Frost-Tite—Fittings. Remco, Inc., Zelienople, Pa.
Fuelguard—Regulators. Ashcraft Co., J. P., Dallas, Tex.
Fuel Saver—Boilers. International Boiler Works Co., The, East Stroudsburg, Pa.
Fuel Saver—Regulators. Nichols Instruments Co., Baltimore, Md.
Fuelsaver—Controls, regulators. Walker Mfg. & Sales Co., St. Joseph, Mo.
Fueltone X-10—Fuel oil treatment. Ampion Corp., Long Island City, N. Y.
Fuel-tron—Fuel oil treatment. Radiator Specialty Co., Charlotte, N. C.
Fulflo—Filters. Commercial Filters Corp., Melrose, Mass.
Fulgrip—Pulleys and sheaves. Maurey Mfg. Corp., Chicago, Ill.
Full Flow—Magnetie traps. Ladish Co., Tri-Clover Div., Kenosha, Wis.
Fulljet—Spray nozzles. Spraying Systems Co., Bellwood, Ill.
Full-view—Meters. Brooks Rotameter Co., Lansdale, Pa.
Fulscope—Recorders, recorder-controllers, regulators. Taylor Instrument Companies, Rochester, N. Y.
Fusionweld—Tubing. Avon Tube Div., Highbie Mfg. Co., Rochester, Mich.
Fybr-Tech—Gaskets and sheets. Technical Ply-Woods Sales, Chicago, Ill.
Fyr-Feeder—Stokers, burners. American Coal Burner and Wood Stoker Corp., Chicago, Ill.
Fyrite—Analyzers, combustion testing kits. Bacharach Industrial Instrument Co., Pittsburgh, Pa.

GAC—Baseboard radiation. General Alliance Corp., San Diego, Calif.
G-B Snap-On—Insulation. Gustin-Bacon Mfg. Co., Kansas City, Mo.
G-Fin—Cooling and heating surface, tubing. Griscom-Russell Co., Massillon, O.
GI-Gas—Boilers. American Radiator & Standard Sanitary Corp., Plumbing & Heating Div., New York, N. Y.
GIL—Filters, regulators, valves. Gas & Oil Industry Laboratories, Inc., Irvington, N.J.
GIL Governoret—Valves. Gas & Oil Industry Laboratories, Inc., Irvington, N. J.
G-K—Cement and compounds. Atlas Mineral Products Co., Mertztown, Pa.
G-R—Aftercoolers, oil coolers, water chillers, exchangers. Griscom-Russell Co., Massillon, O.
GS—Anemometers, hygrometers, indicators, psychrometers, welding and cutting apparatus. General Scientific Equipment Co., Philadelphia, Pa.
GT—Shaft Seals. Greene, Tweed & Co., North Wales, Pa.
G.T.D.—Masonry drills. Greenfield Tap & Die Div. of United Greenfield Corp., Greenfield, Mass.
Gaco—Pipe fittings, hard rubber pipe. Gates Engineering Co., Wilmington, Del.
Gaco-Neoprene & Rubber—Valves, coatings, fittings, tank linings, pipe. Gates Engineering Co., Wilmington, Del.
Gaco-Neoprene Vinyl—Coatings. Gates Engineering Co. Wilmington, Del.
Gagetron—Regulators. Instruments, Inc., Tulsa, Okla.
Galbestos—Sheet metal. Robertson Co., H. H., Pittsburgh, Pa.
Gallo—Gages. Barclay, Inc., Robert, Chicago, Ill.
Galongage—Gages. Applied Mechanics Co., Boston, Mass.
Galva-Lux—Enamels and lacquers. Acorn Refining Co., Cleveland, O.
Gascope—Leak detectors. Mine Safety Appliances Co., Pittsburgh, Pa.
Gas-A-Fire—Burners. Automatic Corp., St. Louis, Mo.
Gask-O-Seal—Seals and gaskets. Parker Seal Co., Culver City, Calif.
Gas-O-Matic—Gas burners. Williams Oil-O-Matic Heating Co., Div. of National Union Electric Corp., Columbus, O.
Gas Pak—Welding rod. Marquette Mfg. Co., Inc., Minneapolis, Minn.
Gasweld—Torches, meters, valves, regulators, welding and cutting apparatus. Liquid Carbonic Div. of General Dynamics Corp., Chicago, Ill.
Gat Fasteners—Clamps, fasteners, nuts and washers. Tinnerman Corp., George A., Cleveland, O.
Gearchem—Gear pumps. Eco Engineering Co., Newark, N. J.
Gear-Draulic—Trenching machines. Auburn Machine Works, Inc., Auburn, Neb.
Gearmotor—Gears. Link-Belt Co., Chicago, Ill.
GearMotoRs—Gears. Philadelphia Gear Corp., Philadelphia, Pa.
Gemco—Bolts, clamps, hangers and supports, nuts and washers, fasteners. Goodloe E. Moore, Inc., Danville, Ill.
Gemware—Hygrometers, psychrometers, thermometers, recorders, switches. G. M. Mfg. Co., New York, N. Y.
Genetron—Refrigerants. General Chemical Div., Allied Chemical Corp., New York, N. Y.

Gentile—Meters. Foster Engineering Co., Union, N. J.
Genuine Stillson—Wrenches. Walworth Co., New York, N. Y.
Geometric—Chasers. Greenfield Tap & Die Div. of United Greenfield Corp., Greenfield, Mass.
Geon—Plastics. Goodrich Chemical Co., B. F., Cleveland, O.
Geophone—Leak detectors. Globe Phone Mfg. Co., Reading, Mass.
Gibarco—Air conditioning units, heaters, pumps. Gilbert & Barker Mfg. Co., West Springfield, Mass.
Gilmer—V-belts, v-belt drives. New York Belting & Packing Co., Passaic, N. J.
Gilsonite—Protective coatings. Ohmlac Paint & Refining Co., Inc., Long Island City, N. Y.
Gilt Edge—Belting. Rhoads & Sons, J. E., Wilmington, Del.
Glasfloss—Filters. Pittsburgh Plate Glass Co., Pittsburgh, Pa.
Glassheat—Electric heating panels. Continental Radiant Glass Heating Corp., New York, N. Y.
Glo Tech—Glass pipe. Fischer & Porter Co., Hatboro, Pa.
Glowan—Gas burners. Martin Co., Inc., J. O., San Francisco, Calif.
Glow-Top—Burners. Gordon & Piatt, Inc., Winfield, Kans.
Goetze—Gaskets. Johns-Manville, New York, N. Y.
Gold Bond Therm-Bloc—Insulation. National Gypsum Co., Buffalo, N. Y.
Golden Bantam—Valves. Henry Valve Co., Melrose Park, Ill.
Golden Fleece—Building insulation. Carney Co., Inc., The, Mankato, Minn.
Good—Pumps. Goodfellow Co., Inc., E. D., Memphis, Tenn.
Goodyearite—Packing. Goodyear Tire & Rubber Co., Akron, O.
Grad-U-Motor—Damper operators. Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.
Gradustat—Regulators, thermostats. Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.
Gradutrol—Diaphragm valves, radiator orifices. Minneapolis-Honeywell Regulator Co., Minneapolis. Minn.
Graham—Valves. Texstream Corp., Houston, Tex.
Granco—Meters, pumps, strainers. Granberg Corp., Oakland, Calif.
Grand Rapids—Boiler vacuum cleaners. Doyle Vacuum Cleaner Co., Grand Rapids, Mich.
Granodine——Protective coatings. Amchem Products, Inc., Ambler, Pa.
Granodraw—Protective coatings. Amchem Products, Inc., Ambler, Pa.
Graph-O-Matic—Panel boards. Powers Regulator Co., Skokie, Ill.
Greastop—Air filters. Air-Maze Corp., Cleveland, O.
Great Seal—Gaskets, packing, tape, valves. New York Belting & Packing Co., Passaic, N. J.
Greenspot—Hose clamps. Scovill Mfg. Co., Waterbury, Conn.
Greyhound—Welders. Duro-Dyne Corp., Farmingdale, L. I., N. Y.
Grid—Finned surfaces, radiation, unit heaters, humidifiers. Murray Mfg. Co., D. J., Wausau, Wis.
Griptube—Fittings. Flodar Corp., Cleveland.
Gripzins—Expansion bolts. Star Expansion Industries Corp., Mountainville, N. Y.
Gritseald—Rotary pumps. St. Louis Tool Co., St. Louis, Mo.
Gruvagrip—Couplings. Gustin-Bacon Mfg. Co., Kansas City, Mo.
Gruvajoint—Couplings. Gustin-Bacon Mfg. Co., Kansas City, Mo.
Guardian—Oil tank gages. Applied Mechanics Co., Boston, Mass.
Guillotine—Cutters, pipe cutting and threading machines, saws. Wachs Co., E. H., The, Chicago, Ill.
Gunchrome—Refractories and refractory cement. Basic Inc., Cleveland.
Gundol—Refractories and refractory cement. Basic Inc., Cleveland, O.
Gun Mag—Refractories and refractory cement. Basic. Inc., Cleveland, O.
Gun Mix—Refractories and refractory cement. Basic Inc., Cleveland, O.
Gusher—Pumps. Ruthman Machinery Co., Cincinnati, O.
Gyro Mass Meter—Meters. Norwood Controls, A Unit of Detroit Controls, Norwood, Mass.
Gyrol—Drives. American Blower Div. of American-Standard, Detroit, Mich.
Gyrol Fluid Drive—Speed changer. American Blower Div. of American-Standard, Detroit, Mich.

H & C—Grilles, registers. Hart & Cooley Mfg. Co., Holland, Mich.
HH&HHV—Air conditioning units. Drayer-Hanson, Div. of National-U.S. Radiator Corp., Los Angeles, Calif.
HS—Fans. American Blower Div. of American-Standard, Detroit.
HTH—Water treatment. Olin Mathieson Chemical Corp., Chemicals Div., Baltimore, Md.
HX-Changers—Heat exchangers. Rempe Co., Chicago, Ill.
Hallowell—Bearings. Standard Pressed Steel Co., Jenkintown, Pa.
Hally-Filters. Delavan Mfg. Co., West Des Moines, Ia.
Hammerkraft—Enamels and lacquers. Hilo Varnish Corp., Div. of Carpenter-Morton Co., Everett, Mass.
Hammerlin—Coatings, enamels. Interchemical Corp., Finishes Div., Newark, N. J.
Hammermill—Belting. Goodyear Tire & Rubber Co., Akron, O.
Hamrflute—Drills. Star Expansion Industries Corp., Mountainville, N. Y.
Ham-R-Tool—Tools. Fastway Fasteners, Inc., Lorain, O.
Hamrtwist—Drills. Star Expansion Industries Corp., Mountainville, N. Y.
Hancock—Valves. Manning, Maxwell & Moore, Inc., Stratford, Conn.
Handi-Can—Refrigerants. Pennsalt Chemicals Corp., Philadelphia, Pa.
Handi-Heet—Torches, refrigerant leak detectors. Smith Welding Equipment Corp., Minneapolis, Minn.
Handi-Rack—Storage racks. XXth Century Heating & Ventilating Co., The, Akron, O.
Hand O Matic—Electrodes. Eutectic Welding Alloys Corp., Flushing, N. Y.
Handy—Valves. Allin Mfg. Co., Chicago, Ill.
Handy—Benders. Holsclaw Bros., Inc., Evansville, Ind.
Handy—Valves. Lunkenheimer Co., Cincinnati, O.
Handy Andy—Vise stands. Western Wire Products Co., St. Louis, Mo.
Handy-Flux—Solder. Handy & Harman, New York, N. Y.
Harco—Pipe fittings and pipe flanges. Harrison Steel Corp., Brooklyn, N. Y.
Hardalloy—Electrodes. McKay Co., Pittsburgh, Pa.
Harmeco—Filters, separators. Harman Equipment Co., Los Angeles, Calif.
Hartmann—Heaters. Montgomery Bros., San Francisco, Calif.
Hastelloy—Nickel and nickel alloy pipe fittings, pipe flanges, pipe nipples, pipe, sheets, and tubing. Haynes Stellite Co., Div. of Union Carbide Corp., New York, N. Y.
Hazleton—Pumps, strainers, valves. Barrett Haentjens & Co., Hazleton, Pa.
Heath-Crete—Refractories. Quigley Co., Inc., New York, N. Y.
Hearth patch—Refractories and refractory cement Basic Inc., Cleveland, O.
Heart-Oak—Belting. Graton & Knight Co., Worcester, Mass.
Heat-aid—Refractories. Pyrolite Products Co., Cleveland, O.
Heat-Cel—Hot gas defrosting systems. Dole Refrigerating Co., Chicago, Ill.
Heatcote—High temperature paint. Debevoise Co., The, Brooklyn, N. Y.
Heatflex—Cables, heaters. S&C Mfg. Co., Cincinnati, O.
Heat-Hog—Coolers. Heatron, Inc., York, Pa.
Heatmaster—Heaters. Coleman Co., Inc., The, Wichita, Kans.
Heat-Pak—Boilers, heaters. Aldrich Co., The, Wyoming, Ill.
Heat-Rem—Paint for hot surfaces. Speco, Inc., Cleveland, O.
Heatrim—Radiation. American Radiator & Standard Sanitary Corp., Plumbing & Heating Div., New York, N. Y.
Heat-Rite—Registers. Auer Register Co., Cleveland, O.
Heatsaver—Systems. Advance Pump Co., Berkeley, Calif.
Heatsum—Electric heating panels, cable. Roberson Inc., Seattle, Wash.
Heat-Valve—Ventilators. Swartwout Co., The, Cleveland, O.
Heat Wagon—Heaters. Lenno Industries, Inc., Marshalltown, Ia.
Heavy Duty—Torches, welding and cutting apparatus. Smith Welding Equipment Corp., Minneapolis, Minn.
Heavy Duty—Pipe cutters. Erie Tool Works, Erie, Pa.
Heavy Duty—Pipe wrenches. Ridge Tool Co., Elyria, O.
Heetaires—Electric heating panels, radiation, heaters. LaSalle Products, Inc., Buffalo, N. Y.
Heilex—Tanks. Heil Process Equipment Corp., Cleveland, O.
Heliflow—Aftercoolers, chillers, oil coolers, heat exchangers, water heaters. Graham Mfg. Co., Inc., New York, N. Y.
Hellite—Refractories. Johns-Manville, New York, N. Y.
Hercules—Floats. Henry Owens & Co., Inc., Cranston, R. I.
Herculite—Tanks. Pittsburgh Plate Glass Co., Pittsburgh, Pa.
Herculoy—Tubing. Revere Copper and Brass, Inc., New York, N. Y.
Herecrol—Protective Coatings, tank linings, enamels and lacquers, lined pipe. Heresite & Chemical Co., Manitowoc, Wis.
Hermetic Eye—Sight glasses for pipe lines. Superior Valve & Fittings Co., Pittsburgh, Pa.
HerNel-Cool—Unit ventilators. Herman Nelson Products, American Air Filter Co., Inc., Louisville, Ky.
Hev-E-Duty — Burners. Industrial Combustion, Inc., Milwaukee, Wis.
Hev-E-Oil—Burners. Industrial Combustion, Inc., Milwaukee, Wis.
Hex-Changer—Heat Exchangers. Drayer-Hanson, Division of National-U. S. Radiator Corp., Los Angeles, Calif.
Hex-Tex—Belts. Allis-Chalmers Mfg. Co., Milwaukee, Wis.
Hi—Bolts, clamps, cleaners, drills, insulation fasteners, pipe hangers and supports, pipe reamers. Holub Industries, Inc., Sycamore, Ill.
Hi-Amp—Tools, pipe clamps. Lenco, Inc., Jackson, Mo.
Hi-Cap—Furnaces. Syncromatic Corp., Watertown, Wis.
Hi-Dri—Refrigerant Dehydrators. Wabash Corp., Chicago, Ill.
Hideaway—Air conditioning units. Burnham Corp., Irvington, N. Y.
Hideway—Cooling towers. Toungate & Coats, Austin, Tex.
Hi-Duty—Tubing cutters, fittings, shafts, flaring tools. Imperial Brass Mfg. Co., Chicago.
Hi-Duty—Combustion chambers. Monogram Products Co., Inc., Philadelphia, Pa.
Hi-Ef—Filters, heads, separators. Anderson Co., V. D., The, Div. of International Basic Economy Corp., Cleveland, O.
Hi-Ex—Roof ventilators. Penn Ventilator Co., Philadelphia, Pa.
High Heat Aluminum—Paint. Valdura Div., American-Marietta Co., Chicago, Ill.
High Heat Gray—Paint. Valdura Div., American-Marietta Co., Chicago, Ill.
High - Ten - 500—Solder. Chemical Specialty Div., Shooz Polish Mfg. Co., Milwaukee, Wis.
Hi-Hopper—Coal and ash conveyors. New London Engineering Co., New London, Wis.
Hilco—Filters. Hillard Corp., Elmira, N. Y.
Hilger—Chillers, unit coolers, unit air conditioners, valves. XL Refrigerating Co., Chicago, Ill.
Hi-Lift—Pumps. Peerless Pump Div., Food Machinery & Chemical Corp., Los Angeles, Calif.
Hi-Line—Plastic pipe, plastic tubing. Skyline Industries Sales, Inc., Titusville, Pa.
Hi-Recovery—Heaters. Quiet Automatic Oil Burner Corp., Newark, N. J.
Hi-Seal—Cement and compounds. Greene, Tweed & Co., North Wales, Pa.
Hi-Seal—Steel tube fittings. Imperial Brass Mfg. Co., Chicago, Ill.
Hi-Speed—Welding and cutting apparatus, torches. Dockson Corp., Detroit, Mich.
Hitchings—Boilers. Burnham Corp., Irvington, N. Y.
Hi - Temp—Insulation. Carey Mfg. Co., Philip, Lockland, Cincinnati, O.
Hi-Temp—Insulation cement, refractories & refractory cement. Zonolite Co., Chicago, Ill.
Hi-Temp—Paint. Illinois Bronze Powder Co., Chicago, Ill.
Hi-Value—Adhesive tape. Johns-Manville, New York, N. Y.
Hoffman—Heaters. Clayton & Lambert Mfg. Co., Louisville, Ky.
Hoffman—Draft controls. Salina Metal Products Co., Salina, Kan.
Hole-Shooter—Drills. Milwaukee Electric Tool Corp., Milwaukee, Wis.
Holgun—Drills. Black & Decker Mfg. Co., Towson, Md.
Hollo-Tech—Doors and panels. Technical Ply-Woods Sales, Chicago, Ill.
Holly—Benders. Griffith Equipment Co., Inc., Los Angeles, Calif.
Holoflite—Dryers. Western Precipitation Corp., Los Angeles, Calif.
Holtite—Bolts, screws. Continental Screw Co., New Bedford, Mass.
Honeycomb—Filters. Wilson & Co., Inc., Chicago, Ill.
Horton—Tanks. Chicago Bridge & Iron Co., Chicago, Ill.
Hot Shot—Unit coolers. Drayer-Hanson, Division of National-U. S. Radiator Corp., Los Angeles, Calif.
Hot Spot—Preheaters. Rempe Co., Chicago.
Hot Spot—Spot welders. Acme Electric Welder Co., Los Angeles, Calif.
Houghto-Clean—Boiler cleaning compounds. Houghton & Co., E. F., Philadelphia, Pa.
Hovalco—Valves. Homestead Valve Mfg. Co., Coraopolis, Pa.
Howlers—Alarms. Benjamin Electric Mfg. Co., Des Plaines, Ill.
Humiclean—Cleaning compounds, water treatment. Carolina Aniline & Extract Co., Charlotte, N. C.

Humidigraph—Humidistats, hygrometers, indicator-controllers. Bristol Co., Waterbury, Conn.
Humidiguide—Hygrometers. Talyor Instrument Companies, Rochester, N. Y.
Humidomist—Nozzles, humidifiers. Supreme Electric Products Corp., Rochester, N. Y.
Humidostat—Humidistats. Johnson Service Co., Milwaukee, Wis.
Humiduct—Unit air conditioners. Bahnson Co., Winston-Salem, N. C.
Humid - U - Stat—Humidistats. Minneapolis-Honeywell Regulator Co., Minneapolis.
Humistat—Humidistats. American Instrument Co., Inc., Silver Spring, Md.
Humi-Temps—Unit air coolers. Larkin Coils, Inc., Atlanta, Ga.
Hum-O-Zone—Room type humidifiers. HERR-midifier Co., Neffsville, Pa.
Humphrey—Heaters. General Gas Light Co., Kalamazoo, Mich.
Huron—Baseboard radiation. Farrell Associates, Charles, Valencia, Pa.
HusHeater—Heaters. Sims Pump Valve Co., Hoboken, N. J.
Hyal—Refractories and refractory cement. Quigley Co., Inc., New York, N. Y.
Hydrafilter—Separators. Wade Mfg. Co., Elgin, Ill.
Hydra-Glide—Cooling towers. Mason Products, Inc., Woburn, Mass.
Hydramotor—Valves. General Controls Co., Glendale, Calif. and Skokie, Ill.
Hydra-Spray—Booths. Griffin & Co., Louisville, Ky.
Hydra-Tube—Dust collectors. Newcomb-Detroit Co., Detroit, Mich.
Hydrecon—Combustion chambers. France Refractories, Co., J. H., Snow Shoe, Pa.
Hydrepair—Clamps. Dresser Mfg. Div., Dresser Industries, Inc., Bradford, Pa.
Hydro—Regulators. Duro-Dyne Corp., Farmingdale, L. I., N. Y.
Hydrocast—Refractories and refractory cement. Taylor Sons Co., Charles, Cincinnati, O.
Hydro-Fin—Radiation. Hydrotherm, Inc., Northvale, N. J.
Hydro-Flo—Heaters, heating systems, circulators, regulators. Bell & Gossett Co., Morton Grove, Ill.
Hydro-Foam—Dust collectors. Mahon Co., R. C., Detroit, Mich.
Hydro-Foil—Pumps. Peerless Pump Div., Food Machinery & Chemical Corp., Los Angeles, Calif.
Hydroguard—Valves. Powers Regulator Co., Skokie, Ill.
Hydro-Line—Pipe fittings, plastic pipe flanges, plastic pipe. Skyline Industries Sales, Inc., Titusville, Pa.
Hydroline—Pumps. Peerless Pump Div., Food Machinery and Chemical Corp., Los Angeles, Calif.
Hydro-Lok—Regulators, valves. American Flow Control Corp., Houston, Tex.
Hydron—Bellows. Clifford Mfg. Co., Div. of Standard Thomson Corp., Waltham, Miss.
Hydro-Precipitator—Washers. Johnson-March Corp., Philadelphia, Pa.
Hydrostatic—Connectors. Mechanical Products Corp., Chicago, Ill.
Hydro-Vectors—Air conditioning units. Hydrotherm, Inc., Northvale, N. J.
Hydro-Whirl—Dust collectors, spray booths. DeVilbiss Metal Fabricators Co., Detroit, Mich.
Hydryer—Dehumidifiers. Pritchard & Co. of California, J. F., Kansas City, Mo.
Hy-Duty—Blades, propeller fans. Schwitzer Corp., Indianapolis, Ind.
Hygrodial—Recorders. Abbeon Supply Co., Jamaica, N. Y.
Hypalon—Protective coatings. Saran Lined Pipe Co., Ferndale, Mich.
Hypalon—Protective coatings. Gates Engineering Co., Wilmington, Del.
Hyrate—Refractories. Plibrico Co., Chicago, Ill.
Hyro—Regulators. Duro-Dyne Corp., New Hyde Park, Long Island, N. Y.
Hy-Spar—Caulking and sealing compounds, enamels and lacquers. Midland Paint & Varnish Co., Cleveland, O.
Hy-Temp—Cement, insulation. Keasbey & Mattison Co., Ambler, Pa.
Hytempite—Cement, refractories. Quigley Co., Inc., New York, N. Y.
Hy-Test—Heaters. Burnham Corp., Irvington, N. Y.
Hy-Test—Water heaters. Smith Co., Inc., H. B., The, Westfield, Mass.
Hy-Vent—Eliminators, valves. Taco Heaters, Inc., Cranston, R. I.

IMO—Pumps. De Laval Steam Turbine Co., Trenton, N. J.
INS—Torches. Lincoln Electric Co., The, Cleveland, O.
IRCO—Combustion chambers. Lindy Heaters, Inc., New York, N. Y.
IVCO—Ventilators. Iona Ventilator Co., Inc., Philadelphia, Pa.
Ice-Cel—Accumulators, chillers. Dole Refrigeration Co., Chicago, Ill.
Icy-Flo—Accumulators. McQuay, Inc., Minneapolis, Minn.
Ideal—Adhesives, insulation. Taft Jenkins Co., Inc., Holyoke, Mass.
Ideal—Tubing cutters, tube expanders. The Gustav Wiedeke Co., Dayton, O.
Ideal—Tools. Boston Machine Works, Co., Lynn, Mass.
Ideal—Traps. Nason Co., Clarkston, Mich.
Idealarc—Welders. The Lincoln Electric Co., Cleveland, O.
IllBronze—Paint. Illinois Bronze Powder Co., Chicago, Ill.
Illco-Way—Water filters, water softeners, water treatment. Illinois Water Treatment Co., Rockford, Ill.
Immersatherm—Thermostats. Mercoid Corp., The, Chicago, Ill.
Imperial—Air conditioning units. International Metal Products Co., Phoenix, Ariz.
Imperial—Heaters. Payne Company La Puente, Calif.
Impervite—Heads. Falls Industries, Inc., Solon, O.
Impervo—Insulation. Philip Carey Mfg. Co., Lockland, Cincinnati, O.
Inco—Electrodes, flanges, pipe fittings, pipe, rod, sheets, tubing. International Nickel Co., Inc., The, New York, N. Y.
Inconel—Pipe, fittings, flanges, pipe, sheets, tubing. International Nickel Co., Inc., The, New York, N. Y.
Inconel—Tubing. Trent Tube Co., East Troy, Wis.
Indeeco—Heaters, preheaters, pipe heating systems. Industrial Engineering & Equipment Co., St. Louis, Mo.
Indestructible—Gaskets. New York Belting & Packing Co., Passaic, N. J.
Indestructible—Valves. Ra-Rich Mfg. Corp., Holtsville, Long Island, N. Y.
Indoor-Outdoor—Thermostats. White-Rodgers Co., St. Louis, Mo.
Industrial Air—Furnaces, heaters. Inland Heater Corp., Minneapolis, Minn.
IngAclad—Clad sheets. Ingersoll Steel Div., Borg-Warner Corp., Chicago, Ill.
In-Line—Reducers and increasers. Link-Belt Co., Chicago, Ill.
Ins-Lite—Insulation. Insulite Div., Minnesota and Ontario Paper Co., Minneapolis, Minn.
Inspecdor—Doors and panels. Zurn Industries, Inc., Erie, Pa.
Instant—Heaters, preheaters. Johnson Corp., The, Three Rivers, Mich.
Instant Glo—Combustion chambers. Boston Machine Works Co., Lynn, Mass.
Instant-Hardner—Compounds. Eutectic Welding Alloys Corp., Flushing, N. Y.
Instant-Vane Rail—Vanes. Cain Mfg. Co., Birmingham, Ala.
InstOmatic—Couplings. Wiggins Oil Tool Co., Inc., E. B., Los Angeles, Calif.
Inst-O-Verse—Electric motors. Franklin Electric Co., Inc., Bluffton, Ind.
Insulag—Insulation, cement. Quigley Co., Inc., New York, N. Y.
Insulation—Protective coatings. Minnesota Mining & Mfg. Co., St. Paul, Minn.
Insulbrix—Refractories. Quigley Co., Inc., New York, N. Y.
Insulcolor—Vapor barriers. Armstrong Cork Co., Lancaster, Pa.
Insulcrete—Refractories. Quigley Co., Inc., New York, N. Y.
Insul Duct—Duct and duct fittings. Coleman Co., Inc., The, Wichita, Kans.
Insulfil—Insulation. Miracle Adhesives Corp., Bellmore, N. Y.
Insulfil—Insulation. Refractory & Insulation Corp., New York, N. Y.
Insulite—Building insulation. Minnesota & Ontario Paper Co., Minneapolis, Minn.
Insulkote—Boiler and tank insulation. Johns-Manville, New York, N. Y.
Insul-Pin System—Insulation fasteners and welders. Graham Mfg. Corp., Needham Hts., Mass.
Insul Pipe—Duct and duct fittings. Coleman Co., Inc., The, Wichita, Kans.
Insulseal—Adhesives. Adhesive Products Corp., New York, N. Y.
Insulseal—Protective coatings. Eagle-Picher Co., Cincinnati, O.
Insulstic—Adhesives. Eagle-Picher Co., Cincinnati, O.
Insultape—Pipe and tubing insulation. Presstite-Keystone Engineering Products Co., A Div. of American-Marietta Co., St. Louis, Mo.
Integral Jet—Burners. Stout & Sons, David, St. Louis, Mo.
Intensarc—Electrodes. National Carbon Co., Div. of Union Carbide Corp., New York, N. Y.
Interlocked—Packing. Johns-Manville, New York, N. Y.
Inter-Matic—Time switches. International Register Co., Chicago, Ill.
Interwoven—Packing. Greene, Tweed & Co., North Wales, Pa.
Ionaire—Ionization apparatus. Wesix Electric Heater Co., San Francisco, Calif.
Ionizers—Ionization apparatus. Welsbach Corp., The, Kitson Valve Div., Philadelphia, Pa.
Irenew—Valves. Powell Co., Wm., The, Cincinnati, O.
Ironhide—Protective coatings. Pittsburgh Plate Glass Co., Pittsburgh, Pa.
Irontite—Water treatment. Salsbury Corp., Los Angeles, Calif.
Ironweld—Compounds. Sight Feed Generator Co., West Alexandria, O.
Irv-o-lite—Plastic tubing. Irvington Div., Minnesota Mining & Mfg. Co., Irvington, N. J.
Isomode—Absorbers, bases and pads, vibration isolating. M. B. Mfg. Co., The, New Haven, Conn.
Isotrons—Refrigerants. Pennsalt Chemicals Corp., Philadelphia, Pa.
Ivco—Roof ventilators. Iona Ventilator Co., Inc., Philadelphia, Pa.

J & C—Burners, fans, furnaces, heaters. Jackson & Church Co., Saginaw, Mich.
JC 60—Cement and compounds. Atlas Mineral Products Co., Mertztown, Pa.
J E—Valves. Jackes-Evans Mfg. Co., St. Louis, Mo.
J & H Customized—Motors. Jack & Heintz, Inc., Cleveland, O.
J & L—Tubing. Jones & Laughlin Steel Corp., Pittsburgh, Pa.
J-M—Bases and pads, cement, tape. Johns-Manville, New York, N. Y.
J M Ball—Traps. Cryer Trap & Valve Div., Encor Corp., Belleville, N. J.
JPS—Bearings. Link-Belt Co., Chicago, Ill.
J-W Gas-Pointer—Leak detectors. Johnson-Williams Inc., Palo Alto, Calif.
J-W Sentinel—Alarms. Johnson-Williams, Inc., Palo Alto, Calif.
J-W Sniffer—Leak testers. Johnson-Williams, Inc., Palo Alto, Calif.
Jal-Con-Weld—Steel pipe. Jones & Laughlin Steel Corp., Pittsburgh, Pa.
Jal Duct—Pipe. Jones & Laughlin Steel Corp., Pittsburgh, Pa.
Jal Zinc—Sheets. Jones & Laughlin Steel Corp., Pittsburgh, Pa.
Janitrol—Boilers, burners, heaters, furnaces, air conditioning units. Surface Combustion Corp., Toledo, O.
Jarene 8—Tubing. Jarrow Products, Chicago, Ill.
Jeep-A-Trench—Trenching machines. Auburn Machine Works, Inc., Auburn, Neb.
Jennings—Ejectors. Nash Engineering Co., South Norwalk, Conn.
Jet Axial—Ventilators. Detroit Blower Corp., Franklin Park, Ill.
Jetglas—Heaters. Day & Night Mfg. Co., La Puente, Calif.
Jet-Hard—Electrodes. The Lincoln Electric Co., Cleveland, O.
Jet-Heat—Burners. Barber Mfg. Co., Cleveland, O.
Jet-Heet—Air heaters. BTU Industries, Inc., Englewood, N. J.
Jet-Line—Combustion chambers. Grant Wilson, Inc., Chicago, Ill.
Jetolaters—Vent flue caps, roof ventilators. Accurate Sheet Metal & Mfg. Wks., Chicago, Ill.
Jet Power—Gas burners. Auburn Burner Co., Edgerton, O.
Jet Tube—Systems. McQuay, Inc., Minneapolis, Minn.
Jetweld—Electrodes. Lincoln Electric Co., The, Cleveland, O.
Jiffy—Regulators. Duro-Dyne Corp., Farmingdale, Long Island, N. Y.
Jiffy Clips—Hangers and supports. Minerallac Electric Co., Chicago, Ill.
Jiffy Dampers—Dampers. Duro-Dyne Corp., Farmingdale, Long Island, N. Y.
John Crane—Boiler tube expanders, gaskets, seals, packing. Crane Packing Co., Morton Grove, Ill.
Johnson—Boilers. Mears-Kane-Ofeldt, Inc., Div. S. T. Johnson Co., Bridgeport, Pa.
Jointite—Cement and compounds. Arco Co., The, Cleveland, O.
Joint Seal—Cement. Armite Laboratories, Los Angeles, Calif.
Jorgensen—Pipe clamps. Adjustable Clamp Co., Chicago, Ill.
Jubilee—Non-metal hose. New York Belting & Packing Co., Passaic, N. J.
June-Aire—Heating and ventilating systems. American Foundry & Furnace Co., Bloomington, Ill.
Junior—Radiation. Weil-McLain Co., Michigan City, Ind.
Junior—Ventilators. Octagon Ventilator Co., Chicago, Ill.

K—Fittings and flanges. Kuhns Brothers Co., Dayton, O.
KAB Kool—Air conditioning units. Metal Products Engr., Inc., Los Angeles, Calif.
K. A. T.—Compounds and water treatment. American K.A.T. Corp., Subsidiary of Magnus Chemical Co., Inc., Garwood, N. J.

K-Fin—Cooling and heating surface, tubing. Griscom-Russell Co., Massillon, O.
K-Louver—Sun reflecting louvers. Kawneer Co., Niles, Mich.
K and M—Controls, feeders, governors, indicator-controller, regulators, valve operators, strainers, traps, valves. Kieley & Mueller, Inc., Middletown, N. Y.
K-Master—Filters, eleminators, separators, traps. Kaye & MacDonald, Inc., West Orange, N. J.
K-Matic—Electric and pneumatic drills. Gardner-Denver Co., Quincy, Ill.
K-Shield—Boiler and pipe insulation. Robinson Industries, Coleman, Mich.
KX-99—Refractories and refractory cement. Green Fire Brick Co., A.P., Mexico, Mo.
Kab Kooler—Air conditioning units. Onan & Sons Inc., D. W., Minneapolis, Minn.
Kable Kord—Belting. New York Belting & Packing Co., Passaic, N. J.
Kamlok—Couplings, fittings. Jordan Corp., Div. of OPW Corp., Cincinnati, O.
Kantleak—Pipe couplings, filters, pipe fittings, pipe nipples, valves. Anderson Brass Co., Detroit, Mich.
Kane—Boilers. Mears-Kane-Ofeldt, Inc., Div. S. T. Johnson Co., Bridgeport, Pa.
Kant-twist—Pipe welding clamps. Custanite Corp., Brooklyn, N. Y.
Kaocast—Refractories and refractory cement. Babcock & Wilcox Co., Boiler Div., New York, N. Y
Kaocrete—Refractories and refractory cement. Babcock & Wilcox Co., Boiler Div., New York, N. Y.
Kaolight—Refractories and refractory cement. Babcock & Wilcox Co., Boiler Div., New York, N. Y.
Kaowool—Refractories and refractory cement. Babcock & Wilcox Co., Boiler Div., New York, N. Y.
Karbate—Carbon pipe, heaters, pumps. National Carbon Co., Div. of Union Carbide Corp., New York, N. Y.
Karbonite—Destroyers. Anderson Chemical Co., Inc., Macon, Ga.
Kast-O-Lite—Refractories & refractory cement. Green Fire Brick Co., A.P., Mexico, Mo.
Kast-Set—Refractories & refractory cement. Green Fire Brick Co., A. P., Mexico, Mo.
Kathabar—Dehumidifiers, unit air conditioners, humidifiers, air washers. Surface Combustion Corp., Toledo, O.
Kaukit—Caulking and sealing compounds. Sonneborn Sons, Inc., L., Building Products Div., New York, N.Y.
Kaylo—Insulation. Owens-Corning Fiberglas Corp., Toledo, O.
KaytherM—Insulation. Keasbey & Mattison Co., Ambler, Pa.
Kearsarge—Packing, gaskets. Johns-Manville, New York, N. Y.
Keflex—Absorbers, bellows, ducts and duct fittings, hose, pipe joints, pipe nipples, metal tubing. U. S. Flexible Metallic Tubing Co., Los Angeles, Calif.
Kek—Compounds, steam and water treatments. Kenite Laboratory, Madison, N. J.
Kemaloid—Water treatment compounds, boiler cleaning compounds. McMillan Industrial Supplies, C. C., Portland, Ore.
Kem Cati-Coat—Enamels and lacquers. Sherwin-Williams Co., The, Cleveland, O.
Kem Lustral—Enamels and lacquers. Sherwin-Williams Co., The, Cleveland, O.
Ken—Combustion chambers, fittings & bushings. Barclay, Inc., Robert, Chicago, Ill.
Kenbric—Soot destroyers. Kenite Laboratory, Madison, N. J.
Kennison—Nozzles. Builders-Providence Div., B-I-F Industries, Inc., Providence, R. I.
Keps—Nuts and washers. Shakeproof Div., Illinois Tool Wks., Elgin, Ill.
Keystone—Packaged steam boiler units. Erie City Iron Wks., Erie, Pa.
Keystone—Gas fired heaters. Bastian-Morley Co., Inc., LaPorte, Ind.
Kidskin—Packing. Darcoid Co., Inc., New York, N. Y.
Kindorf—Bolts, hangers and supports, inserts, racks. Steel City Electric Co., Pittsburgh, Pa
Kinepack—Burners. Webster Engineering Co., Tulsa, Okla.
Kinetic—Gas burners. Webster Engineering Co., Tulsa, Okla.
King—Gages. Oil Equipment Mfg. Corp., New Haven, Conn.
King-clip—Valves. Lunkenheimer Co., Cincinnati, O
King Fill—Alarms. Oil Equipment Mfg. Corp. New Haven, Conn.
King-Kool—Fans, propeller. Belco Industries, Inc., St. Louis, Mo.
Kleen Air—Filters. Kaye & MacDonald, Inc., West Orange, N. J.
Kleenaire—Ventilators. Hudson Mfg. Co., H.D., Chicago, Ill.
Kleenflo—Unit air filters. Air-Maze Corp., Cleveland. O.
Kleen Koil—Boiler cleaning compounds. Clayton Mfg. Co., El Monte, Calif.
Klero—Packing. Greene, Tweed & Co., North Wales, Pa.
Kling Felt—Gaskets, tape. Products Research Co., Los Angeles, Calif.
Klingtite—Belting. Goodyear Tire & Rubber Co., Akron, O.
Klip-Kupl—Pipe fittings. American Flow Control Corp., Houston, Tex.
Klixon—Regulators, relays, thermostats. Spencer Thermostat Div., Metals & Controls Corp., Attleboro, Mass.
Klondike—Arc welders, pipe thawers. Fern, Ralph, Scranton, Pa.
Kno-Draft—Air diffusers, sound and volume control units. Conner Engineering Corp., Danbury, Conn.
Kold Board—Insulation. Baldwin-Hill Co., Trenton, N. J.
Kold Wave—Condensers. Heat-Exchangers, Inc., Chicago, Ill.
Koncentrix—Fittings. Special Screw Products, Bedford, O.
Kontrol Motor—Diaphragm valves. Kieley & Mueller, Inc., North Bergen, N. J.
Kooler-Aire—Condensers, air conditioning units. United States Air Conditioning Corp., Delaware, O.
Kool-Shade—Solar heat resisting screens. Reflectal Corp. Subsid., Borg-Warner Corp., Chicago, Ill.
Kool-Temp—Air conditioning units. Midwest Air Conditioning Co., Des Moines, Ia.
Kopr-Kote—Cement and compounds. Jet-Lube, Inc., Burbank, Calif.
Korda—Gaskets. Chicago Gasket Co., Chicago, Ill.
Kor-It—Drills. Hamlin Co., Inc., J. F., San Francisco, Calif.
Korner-King—Tools. R C S Tool Corp., Bloomington, Ill.
Koroseal—Tank linings; plastic pipe; plastic tubing; plastic sheets; pipe couplings; ducts and duct fittings; pipe fittings; gaskets. Goodrich Industrial Products Co., B. F., Akron, O.
Koroseal—Conduit, pipe couplings, fittings, plastic pipe, plastic sheets, plastic tubing, plastic valves. Goodrich Industrial Products Co., B. F., Koroseal Div., Marietta, O.
Krome Kote—Coatings. Wolfe-Kote Co., Inc., Sheboygan, Wis.
Kromik—Coatings. Sherwin-Williams Co., The, Cleveland, O.
Kromover—Compounds. All-State Welding Alloys Co., Inc., White Plains, N. Y.
Kruzite—Refractories & refractory cement. Green Fire Brick Co., A. P., Mexico, Mo.
Kuchler-Huhn—Shaft seals. Koppers Co., Inc., Metals Products Div., Baltimore, Md.
Kwick-Kupling—Couplings, joints. American Flow Control Corp., Houston, Tex.
Kwikflux—Solder. Special Chemicals Corp., Ossining, N. Y.
Kwik-Kleen—Compounds, scale removal, treatment. North American Mogul Products Co., The, Cleveland, O.
Kwik-way—Regulators. Hart & Cooley Mfg. Co., Holland, Mich.
Kwik-Steam—Boilers. Littleford Bros., Inc., Cincinnati, O.
Kwiky-Dots—Industrial adhesive tape. By-Buk Co., Los Angeles, Calif.

L. A. Line—Motors. Louis Allis Co., The, Milwaukee, Wis.
L & H—Heaters. Thermador Electrical Mfg., Los Angeles, Calif.
LJ-1—Torches. Lincoln Electric Co., The, Cleveland, O.
L & N—Indicators. Leeds & Northrup Co., Philadelphia, Pa.
La-Co—Solder and fluxes. Lake Chemical Co., Chicago, Ill.
Lagfas—Adhesives. Foster Co., Benjamin, Philadelphia, Pa.
Lagtone—Adhesives, for pipe covering. Foster Co., Benjamin, Philadelphia, Pa.
Laminair-Flo—Ducts and duct fittings. United Sheet Metal Co., Inc., Columbus, O.
Lamneck—Hangers and supports, gas vent and flue. Clayton & Lambert Mfg. Co., Louisville, Ky.
LaMont—High temperature water boilers. International Boiler Works Co., The, East Stroudsburg, Pa.
Landmaco—Pipe cutting machines. Landis Machine Co., Waynesboro, Pa.
Lanhydro—Pipe cutting machines. Landis Machine Co., Waynesboro, Pa.
Larm-Tector—Alarms. Way-Wolff Associates, Inc., Long Island City, N. Y.
Lasco—Insulation, plastic pipe. Lynch Asbestos Co., Los Angeles, Calif.
Lattice-Braid—Packing. Garlock Packing Co., The, Palmyra, N. Y.
L-Blow—Ventilators. Trade-Wind Motor Fans, Inc., Pico Rivera, Calif.
Leader—Stocks and dies. Oster Mfg. Co., Wickliffe, O.
Leader—Water heaters. Day & Night Mfg. Co., La Puente, Calif.
Leadtex—Sheets. Revere Copper & Brass, Inc., New York, N. Y.
Leak Lock—Cement and compounds. High-side Chemicals Inc., Clifton, N. J.
Leak-Tec—Leak testers, and detectors. American Gas & Chemicals, Inc., New York.
Lectro-Clad—Protective coatings, fittings, pipe, sheets. Bart Mfg. Inc., Belleville, N. J.
Lectrodryer—Dehumidifiers. Pittsburgh Lectrodryer Div., McGraw-Edison Co., Pittsburgh, Pa.
Led-Plate—Cement and compounds, lubricants. Armite Laboratories, Los Angeles, Calif.
Ledaloyl—Sleeve bearings. Johnson Bronze Co., New Castle, Pa.
Leigh—Roof ventilators. Air Control Products, Inc., Coopersville, Mich.
Leigh Imperial—Metal canopies. Air Control Products, Inc., Coopersville, Mich.
Lekro-Tektor—Electrolytic devices. Marlo Coil Co., St. Louis, Mo.
Lektrik-Air—Ventilators. Hudson Mfg. Co., H.D., Chicago, Ill.
Len-Lox—Ducts and Duct Fittings. Lennox Industries, Inc., Marshalltown, Ia.
Lert-A-Larm—Fire extinguishing systems. Miller-Harris Instrument Co., Milwaukee, Wis.
Letheray—Sterilizing air units. Hanovia Lamp Div., Engelhard Industries, Inc., Newark, N. J.
Levalarm—Alarms, cut-offs. Reliance Gauge Column Co., Cleveland, O.
Level Eye—Gages, indicators. Phillips & Co., H. A., Chicago, Ill.
Level-Master—Regulators. Sporlan Valve Co., St. Louis, Mo.
Levelometer—Gages. Liquidometer Corp., Long Island City, N. Y.
Levelrator—Indicators, alarms, recorders, regulators, switches. Fischer & Porter Co., Hatboro, Pa.
Level-Rite—Vibration isolating bases. Felters Co., The, Boston, Mass.
Level-Trol—Regulators. Fisher Governor Co., Marshalltown, Ia.
Leveltronic—Alarms, controls. Instruments, Inc., Tulsa, Okla.
Lexan—Plastics, powders and resins. General Electric Co., Chemical Materials Dept., Pittsfield, Mass.
Liberty—Hose. Continental Rubber Wks., Erie, Pa.
Liberty—Packing. Johns-Manville, New York.
Liberty—Ventilators, caps. Penn Ventilator Co., Philadelphia, Pa.
Life Line "A"—Electric motors. Westinghouse Electric Corp., Pittsburgh, Pa.
Lift Gate—Gates, lift, for trucks. Anthony Co., Streator, Ill.
Light Loader—Coal and ash conveyors. New London Engineering Co., New London, Wis.
Lightweight Champ—Pipe cutting and threading machines, pipe vise stands. Oster Mfg. Co., Wickliffe, O.
Lightweld—Electrodes. Lincoln Electric Co., The, Cleveland, O.
Lignophol—Enamels and lacquers. Sonneborn Sons, Inc., L., Building Products Div., New York, N. Y.
Lima—Stokers. Carnes, Inc., John R., Lima, O.
Limit-Load—Centrifugal fans. Buffalo Forge Co., Buffalo, N. Y.
LimiTorque—Valves, valve operators. Philadelphia Gear Corp., Philadelphia, Pa.
Limitrol—Alarms. Barber-Colman Co., Rockford, Ill.
Lincwelder—Welders. Lincoln Electric Co., The, Cleveland, O.
Line-A-Spede—Gear—Motors. Allis Co., Louis, The, Milwaukee, Wis.
Line-Air—Diffusers. Universal Diffuser Corp., Tuckahoe, N. Y.
Line-Flo—Sight glasses for pipe lines, dehydrators. Ansul Chemical Co., Refrigeration Div., Marinette, Wis.
Lineflow—Fans. American Blower Div. of American-Standard, Detroit, Mich.
Link-Grip—Pipe wrenches. American Machine Wks., Inc., Racine, Wis.
Lin-Lok—Hose. Mic-Lin Co., Maple Shade, N. J.
Linovector—Heating surface, radiation. Vulcan Radiator Co., Hartford, Conn.
Linoventilator—Unit ventilators. Vulcan Radiator Co., Hartford, Conn.
Lipco—Cement lined fittings and pipe. Cement Lined Pipe Co., Lynn, Mass.
Liquid Eye—Sight glasses. Allin Mfg. Co., Chicago, Ill.
Liquid Ice—Water chillers and refrigerating compressors. Cool-Ette, Inc., Detroit, Mich.
Liquid Precipitator—Washers. Johnson-March Corp., Philadelphia, Pa.
Liquid Wrench—Solvent. Radiator Specialty Co., Charlotte, N. C.
Liquiflux—Welding compounds. Sight Feed Generator Co., West Alexandria, O.
Liqui-Jector—Filters. Selas Corp. of America, Dresher, Pa.
Liqui-Med—Oxygen piping and regulating systems. Liquid Carbonic Div. of General Dynamics Corp., Chicago, Ill.

Lira—Indicators, recorders. Mine Safety Appliances Co., Pittsburgh, Pa.

Lite Cast—Combustion chambers. Monogram Products Co., Inc., Philadelphia, Pa.

Lite-Mite—Stands, wrenches. International Forge Co., Chicago, Ill.

Lite-O-Matic—Torches, welding and cutting apparatus. Smith Welding Equipment Corp., Minneapolis, Minn.

Lithoform—Protective coatings. Amchem Products, Inc., Ambler, Pa.

Little Beaver—Pumps. Johnston Pump Co., Pasadena, Calif.

Little Blacksmith—Punches, shears. Kidder Mfg. Co., Inc., J. F., Burlington, Vt.

Little Giant—Sump pumps. Chicago Pump Co., Subsidiary of Food Machinery & Chemical Corp., Chicago, Ill.

Little Giant—Stock and dies. Greenfield Tap & Die Div. of United Greenfield Corp., Greenfield, Mass.

Little Giant—Unit heaters. John J. Nesbitt, Inc., Philadelphia, Pa.

Little Giant—Pipe crimper tools. Pioneer Tool Company, Racine, Wis.

Little Landis—Portable pipe cutting and threading machines. Landis Machine Co., Waynesboro, Pa.

Livermont—Wrenches, tools. Richmont, Inc., Monrovia, Calif.

Lloyd—Solder and fluxes. Johnson Mfg. Co., Inc., Mt. Vernon, Ia.

Load-Mobile—Trucks. American Pulley Co., The, Philadelphia, Pa.

Lo-Blast—Burners. Mid-Continent Metal Products Co., Chicago, Ill.

Loc-A-Leek—Clamps. Burlis Products Co., Brooklyn, N. Y.

Lockaire—Insulation. Plastergon Wall Board Co., Buffalo, N. Y.

Lock-Joint—Ducts. Inland Steel Products Co., Milwaukee, Wis.

Lock-O-Seal—Seals. Parker Seal Co., Culver City, Calif.

Lockseam—Pipe. Naylor Pipe Co., Chicago.

Loctite—Cement and compounds. American Sealants Co., Hartford, Conn.

Lodestar—Hoists. Chisholm-Moore Hoist Div., Columbus McKinnon Chain Corp., Tonawanda, N. Y.

Lo-K—Insulation. Lockport Mills, Inc., Lockport, N. Y.

Lolag—Heaters. American Instrument Co., Inc., Silver Spring, Md.

Lo-Line—Cooling towers. Pritchard & Co. of California, J. F., Kansas City, Mo.

Long Life—Hose, packing. Goodall Rubber Co., Trenton, N. J.

Longlife—Coating. Flexrock Co., Philadelphia, Pa.

Longrip—Pipe extractors. Ridge Tool Co., Elyria, O.

Longhorn—Heaters. Hotstream Heater Co., Cleveland, O.

Lo-Set—Stokers. Canton Stoker Corp., Canton, O.

LoStoker—Stokers. Detroit Stoker Co., Monroe, Mich.

Louvent—Ventilators. Octagon Ventilator Co., Chicago, Ill.

Louverail—Louvers and shutters. Cain Mfg. Co., Birmingham, Ala.

Lo-Vevor—Conveyor. Ajax Flexible Coupling Co., Inc., Westfield, N. Y.

Low Amp—Arc welding electrodes. Eutectic Welding Alloys Corp., Flushing, N. Y.

Lowcost—Boilers. Murray Iron Works Co., Burlington, Ia.

Low-Line—Ventilators. Swartwout Co., The, Cleveland, O.

Lown—Machine. San Angelo Foundry & Machine Co., San Angelo, Tex.

Low Pressure Drop—Strainers. Zurn Industries, Inc., Erie, Pa.

Low Temp—Gas welding rods. Eutectic Welding Alloys Corp., Flushing, N. Y.

Loxin—Bolts. Star Expansion Industries Corp., Mountainville, N. Y.

Loxit—Fittings. Scovill Mfg. Co., Waterbury, Conn.

Loxite—Pipe, covering adhesives. Xylos Rubber Co., Akron, O.

Lucite—Plastics, powder and resins. duPont de Nemours & Co., E. I., Polychemicals Dept., Wilmington, Del.

Luminite—Boiler cleaning compounds, soot destroyers, steam system treatment. Warren Refining & Chemical Co., The, Cleveland, O.

Luncor—Valves. Lunkenheimer Co., Cincinnati, O.

Lusterlite—Insulation. Insulite Div. Minnesota & Ontario Paper Co., Minneapolis, Minn.

Luxaire—Heaters. Olsen Mfg. Co., C. A., Elyria, O.

M.B.—Heaters. Montgomery Bros., San Francisco, Calif.

M.D.—Boilers. Murray Iron Wks. Co., Burlington, Ia.

M. E.—Motors. Marathon Electric Mfg. Corp., Wausau, Wis.

M & E—Heaters, tubing. Merchants & Evans Co., Philadelphia, Pa.

M & F—Rubber base enamel. Valdura Div., American-Marietta Co., Chicago, Ill.

M & H—Sheets. Matthiessen & Hegeler Zinc Co., La Salle, Ill.

MIF—Couplings, fittings. Malleable Iron Fittings Co., Branford, Conn.

MKO—Pumps, boilers. Mears-Kane-Ofeldt, Inc., Div. S. T. Johnson Co., Bridgeport, Pa.

M & M—Alarms, cut-offs, feeders, operators, regulators, solenoid and solenoid coils, switches, valves. McDonnell & Miller, Inc., Chicago.

M-Cal—Nameplates. North Shore Nameplate, Inc., Bayside, N. Y.

M-Pel-Air—Blades, fans, blowers, exhausters, exhauster units, air vents, blower wheels, ventilators. Brookside Corp., McCordsville, Ind.

M-R-C—Ball bearings. Marlin-Rockwell Corp., Jamestown, N. Y.

M-Scope—Pipe locators, leak detectors. Fisher Research Laboratory, Inc., Palo Alto, Calif.

M & T—Welders, gas welding rods. Metal & Thermit Corp., Rahway, N. J.

M-VB—Valves. Scovill Mfg. Co., Waterbury, Conn.

MW-One—Adhesives, cement. Philip Carey Mfg. Co., Lockland, Cincinnati, O.

MW-50—Adhesives, cement. Philip Carey Mfg. Co., Lockland, Cincinnati, O.

Macheta—Fans, fan blades, ventilators. Aerovent Fan Co., Inc., Piqua, O.

Maco-Glas—Treated cloth. Menardi & Co., El Segundo, Calif.

Magic—Cement and compounds. Blue Ridge Talc Co., Inc., Henry, Va.

Magic Carpet—Door controls. Stanley Works, The, New Britain, Conn.

Magic Dial—Pre-assembled control systems. Midwest Automatic Control Co., Des Moines, Ia.

Magic Eye—Sight glasses. Imperial Brass Mfg. Co., Chicago, Ill.

Magic Eye—Door controls. Stanley Works, The, New Britain, Conn.

Magic-Grip—Pulleys and sheaves. Allis-Chalmers Mfg. Co., Milwaukee, Wis.

Magic Pivot—Electric saws. Oster Mfg. Co., John, Milwaukee, Wis.

Magic Wire—Control systems wire. Midwest Automatic Control Co., Des Moines, Ia.

Magnaflow—Pumps. The Corley Co., Plainville, Conn.

Magna-Line—Plastic pipe fittings, plastic pipe flanges, plastic pipe, plastic unions, plastic valves. Skyline Industries Sales, Inc., Titusville, Pa.

Magnefer—Refractories and refractory cement. Basic Inc., Cleveland, O.

Magnehelic—Portable analyzers, gages, kits, manometers, meters, switches, testers, tubes. Dwyer Mfg. Co., F. W., Michigan City, Ind.

Magnetrol—Alarms, boiler cut-offs, switches. Schaub Engineering Co., Fred H., Chicago.

Magnex—Scale removal. Magnus Chemical Co., Garwood, N. J.

Magnilastic—Expansion pipe joints. Cook Electric Co., Chicago, Ill.

Magnorite—Cement, refractories and refractory cement. Norton Co., Worcester, Mass.

Main Line—Plastic pipe. Skyline Industries Sales, Inc., Titusville, Pa.

Mainline—Propeller fans. Main Cornice Works, Inc., Los Angeles, Calif.

Mainliner—Fan blades and fans. Burden Co., Alan E., Los Angeles, Calif.

Make-Up-Air—Unit heaters. New York Blower Co., Chicago, Ill.

Malgate—Valves. Powell Co., Wm., The Cincinnati, O.

Malrenew—Valves. Powell Co., Wm., The, Cincinnati, O.

Manco—Plastic pipe, absorbers. Manufacturers Corp., Mansfield, O.

Mangajet—Arc welding electrodes. Lincoln Electric Co., The, Cleveland, O.

Manganend—Electrodes. Arcos Corp., Philadelphia, Pa.

Manganweld—Electrodes. Lincoln Electric Co., The, Cleveland, O.

Manhattan—Grinders and grinding wheels. Raybestos-Manhattan, Inc., Passaic, N. J.

Manhattan—Packing. Greene, Tweed & Co., North Wales, Pa.

Marfaid—Valves. Hays Mfg. Co., Erie, Pa.

Mar-Flex—Joints. Marquette Coppersmithing Co., Philadelphia, Pa.

Mark Time—Time switches. Rhodes, Inc., M. H., Hartford, Conn.

Mark XI—Welders. KSM Products, Inc., Merchantville, N. J.

Mars—Pumps, engines. Solar Aircraft Co., San Diego, Calif.

Marvair—Air conditioning units. Muncie Gear Works, Inc., Muncie, Ind.

Marvel—Heaters. Bastian-Morley Co., Inc., La Porte, Ind.

Marvelwite—Enamels and lacquers. Sonneborn Sons, Inc., L., Building Products Div., New York, N. Y.

Masco—Combustion chambers. Munn & Steele, Inc., South Boston, Mass.

Mascote—Insulation, combustion chambers. Munn & Steele, Inc., South Boston, Mass.

Master—Fittings. Mel Products Co., The, East Haven, Conn.

Master 150#—Unions. Jefferson Union Co., Inc., Lexington, Mass.

Master—Water heaters. Kehm Corp., The, Chicago, Ill.

Master-Bilt—Pumps. Schaub Engineering Co., Fred H., Chicago, Ill.

Master Pilot—Valves. Powell Co., Wm., The, Cincinnati, O.

Mastic—Concrete insulation. Poe Co., C. W., The, Cleveland, O.

Maxaw—Electric saws. Oster Mfg. Co., John, Milwaukee, Wis.

Maxdril—Drills. Oster Mfg. Co., John, Milwaukee, Wis.

Maxicorder—Recorders. Dickson Co., Chicago, Ill.

Maximon—Gages. J. E. Longergan Co., Philadelphia, Pa.

Maxsteam—Boilers. Martin Co., Inc., J. O., San Francisco, Calif.

McGregor—Glasses. Chesterton Co., A. W., Everett, Mass.

Measure Marked—Plastic pipe. Plastex Co., Columbus, O.

Measurrench—Wrenches. Williams & Co., J. H., Buffalo, N. Y.

Mechanipak—Seals. Garlock Packing Co., Palmyra, N. Y.

Meco—Torches, compounds, flame cutters, leak detectors, gages, regulators, valves, welding rod. Modern Engineering Co., St. Louis, Mo.

Melco—Piping oxygen, air conditioning units. Melchior, Armstrong Dessau Co. of Delaware, Inc., Ridgefield, N. J.

Meletron—Switches. Barksdale Valves, Los Angeles, Calif.

Mercury—Pipe cutting machines, pipe cutters. Obear & Son, W. F., Inglewood, Calif.

Merrill Process—Heating systems. Parks-Cramer Co., Fitchburg, Mass.

Metagraphic—Transmitters. Bristol Co., The, Waterbury, Conn.

Metalbestos—Caps. Wallace Co., William, Metalbestos Div., Belmont, Calif.

Metal-Master—Shears. Wiss & Sons Co., J., Newark, N. J.

Metalflo—Tubes and tubing. H & H Tube & Mfg. Co., Detroit, Mich.

Metalset—Caulking and sealing compounds. Smooth-On Mfg. Co., Jersey City, N. J.

Metameter—Transmitters. Bristol Co., The, Waterbury, Conn.

Metermax—Systems. Leeds & Northrup Co., Philadelphia, Pa.

Meteor—Hoists. Chisholm-Moore Hoist Div., Columbus McKinnon Chain Corp., Tonawanda, N. Y.

Metlcap—Vent flue caps, pipe and fittings. Hart and Cooley Mfg. Co., Holland, Mich.

Met-L-Flex—Bases and pads. Robinson Aviation, Inc. Teterboro, N. J.

Met-L-Tex—Protective coatings. France Refractories Co., J. H., Snow Shoe, Pa.

Metl-Tech—Doors and panels, metal sheets. Technical Ply-Woods Sales, Chicago, Ill.

Metlvent—Pipe and fittings. Hart & Cooley Mfg. Co., Holland, Mich.

Mex-Ko—Refractories & refractory cement. Green Fire Brick Co., A. P., Mexico, Mo.

Miami—Fans. Philip Carey Mfg. Co., Lockland, Cincinnati, O.

Micafil—Insulation. Munn and Steele, Inc., South Boston, Mass.

Micrelay—Controllers and starters, relays. Ebert Electronics Corp., Queens Village, N. Y.

Micro—Low water cut-offs. Maid-O'-Mist, Inc., Chicago, Ill.

Micro—Valves. Integral Corp., Long Island, N. Y.

Microdyne—Dust collectors. Joy Mfg. Co., Pittsburgh, Pa.

Micro-Feed—Humidifiers. Cleveland Humidifier Co., Cleveland, O.

Micro-Feeder—Pumps. Proportioneers, Inc., Div. of B-I-F Industries, Inc., Providence, R. I.

Micro-filters—Filters. Selas Corp. of America, Dresher, Pa.

Microflex—Bases and pads. L.O.F. Glass Fibers Co., Toledo, O.

Micro-Klean—Filters, strainers. Cuno Engineering Corp., Meriden, Conn.

Microlite—Insulation. L.O.F. Glass Fibers Co., Toledo, O.

Micro-Lok—Insulation. L.O.F. Glass Fibers Co., Toledo, O.

Micromet—Water treatment. Calgon Co., Pittsburgh, Pa.

Micro Motors—Motors. Redmond Co., Inc., Owosso, Mich.

Micro-Netic—Feeders. Campbell Co., J. A., Long Beach, Calif.

MicroRold—Sheets. Washington Steel Corp., Washington, Pa.

Micro-Screen—Filters. Cuno Engineering Corp., Meriden, Conn.

Microtex—Insulation. L.O.F. Glass Fibers Co., Toledo, O.

Microtherm—Thermostats. Barber-Colman Co., Rockford, Ill.
Micro Valve—Valves. Barworth, Inc., Springfield, N. J.
Micro-Weld—Spot welders. Micro Products Co., Chicago, Ill.
Midco—Heaters. Mid-Continent Metal Products Co., Chicago, Ill.
Midget—Radiation. Utica Radiator Corp., Utica, N. Y.
Midget—Float valves. Maid-O'-Mist, Inc., Chicago, Ill.
Midget Powerhouse—Unit heaters. Century Engineering Corp., Cedar Rapids, Ia.
Midg-O-Matic—Valves. Hays Mfg. Co., Erie, Pa.
Mighty Midget—Drills. Stanley Electric Tools, Div. of The Stanley Works, New Britain, Conn.
Mighty Mite—Thermostats. Mechanical Industries Production Co., Akron, O.
Mikro-Collectro—Dust collectors. Pulverizing Machinery Div., Metals Disintegrating Co., Inc., Summit, N. J.
Mikro-Pulsaire—Dust collectors. Pulverizing Machinery Div., Metals Disintegrating Co., Inc., Summit, N. J.
Mikro Rotary Feeder—Feeders. Pulverizing Machinery Div., Metals Disintegrating Co., Inc., Summit, N. J.
Mil-Ac—Air conditioning units. Ellis & Watts Products, Inc., Cincinnati, O.
Milcor—Angles, ducts, doors and panels, hangers and supports, ventilators. Inland Steel Products Co., Milwaukee, Wis.
Milford—Tools. Thompson & Son Co., The, Henry G., New Haven, Conn.
Mills—Boilers. Smith Co., Inc., H. B., The Westfield, Mass.
Mindicator—Gages. Dickson Co., The, Chicago, Ill.
Minditrol—Indicator-controllers. Dickson Co., Chicago, Ill.
Mine-Line—Plastic pipe. Skyline Industries Sales, Inc., Titusville, Pa.
Mineralead—Cement and compounds. Atlas Mineral Products Co., Mertztown, Pa.
Minicordes—Recorders. Dickson Co., The, Chicago, Ill.
Minirelay—Controllers and starters, relays, switches. Ebert Electronics Corp., Queens Village, N. Y.
Mipatan—Machines, hammers, tools. Port City Machine & Tool Co., Muskegon, Mich.
Mipco—Valves. Associated Valve & Engineering Co., North Wales, Pa.
Miracle—Fasteners. Devices, Inc., A Div. of Miracle Adhesives Corp., Bellmore, N. Y.
Miracle Red—Coatings. Debevoise Co., The, Brooklyn, N. Y.
Mixend—Arc welding electrodes. Arcos Corp., Philadelphia, Pa.
Mizzou—Refractories & refractory cement. Green Fire Brick Co., A. P., Mexico, Mo.
Mobilbead—Dehumidifiers. Socony-Mobil Oil Co., Inc., New York, N. Y.
Mobilene—Gaskets. Johns-Manville, New York, N. Y.
Model-F—Wrenches. Richmont, Inc., Monrovia, Calif.
Model Star—Valves. Powell Co., Wm., The, Cincinnati, O.
Moderator—Heating Systems. Webster & Co., Warren, Camden, N. J.
ModernAire—Fans, unit air conditioners. National Gas Equipment Co., Inc., Denison, Tex.
Modern-Line—Plastic pipe. Skyline Industries Sales, Inc., Titusville, Pa.
Modu-Aire—Air conditioning units. United States Air Conditioning Corp., Delaware, O.
Moduflow—Control systems. Minneapolis-Honeywell Regulator Co., Minneapolis.
Modulatic—Boilers. Vapor Heating Corp., Chicago, Ill.
Modutrol—Heating systems, valve and duct operators. Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.
Modutron—Regulators. Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.
Modu-Wave—Welders. Sciaky Bros., Inc., Chicago, Ill.
Mogul—Packing. Johns-Manville, New York.
Moisture Magnet—Dehumidifiers. Remington Air Conditioning Div., Remington Corp., Auburn, N. Y.
Moncrief—Ducts and duct fittings, heaters. Henry Furnace Co., The, Medina, O.
Moncrief—Ducts and duct fittings. Olsen Mfg. Co., C.A., Elyria, O.
Monel—Pipe fittings, flanges, pipe, sheets, tubing. International Nickel Co., Inc., The, New York, N. Y.
Monend—Arc welding electrodes. Arcos Corp., Philadelphia, Pa.
Monitor—Boilers. Cleaver-Brooks Co., Milwaukee, Wis.
Monmouth—Humidifiers, Valves. Cleveland Humidifier Co., Cleveland, O.
Monobloc—Pumps. Worthington Corp., East Orange, N. J.
Monobolt—Chillers, heat exchangers, oil coolers, water heaters. Graham Mfg. Co., New York, N. Y.
Mono-Cast—Pipe. American Cast Iron Pipe Co., Birmingham, Ala.
Monofin—Radiation. Wesix Electric Heater Co., San Francisco, Calif.
Monoflo—Hot water heating systems and fittings. Bell & Gossett Co., Morton Grove, Ill.
Mono-Line—Refractories. Quigley Co., Inc., New York, N. Y.
Mono Motors—Motors. Redmond Co., Inc., Owosso, Mich.
Mono-Peen—Enamels and lacquers, protective coatings. Interchemical Corp., Finishes Div., Newark, N. J.
Monotube—Drives. Link-Belt Co., Chicago, Ill.
Monovent—Ventilators. Burt Mfg. Co., Akron.
Monoweld—Electrodes, arc welding. All-State Welding Alloys Co., Inc., White Plains, N. Y.
Monoxer—Detectors. Bacharach Industrial Instrument Co., Pittsburgh, Pa.
Monoxivent—Fittings. Kent-Moore Organization, Inc., Warren, Mich.
Monsoon—Fans. Jamieson Mfg. Co., Dallas, Texas.
Morflex—Flexible couplings. Morse Chain Co., Ithaca, N. Y.
Mor-Grip—Drives, V belts. Maurey Mfg. Corp., Chicago, Ill.
Morlex—Steam system treatment. Union Carbide Chemicals Co., Div. of Union Carbide Corp., New York, N. Y.
Mortite—Gaskets, caulking and sealing compounds, tape. Mortell Co., J. W., Kankakee, Ill.
Motoreducer—Gear—motors. Falk Corp., Milwaukee, Wis.
MotoReducer—Speed reducers. Philadelphia Gear Corp., Philadelphia, Pa.
Motorgear—Gear—motors. Link-Belt Co., Chicago, Ill.
Motorstoker—Stokers. Hershey Motorstoker, Manheim, Pa.
Motosteel—Valves. Taylor Instrument Companies, Rochester, N. Y.
Mototrol—Indicator-controllers. Automatic Control Co., St. Paul, Minn.
Mototurb—Ventilators. Uno Ventilator Co., Malden, Mass.
Mouat—Compounds, eliminators, traps. Squires Co., C. E., The, Cleveland, O.
Mounts—Base and pads. Lord Mfg. Co., Erie, Pa.
Muckle-Vent—Ventilators. Muckle Mfg. Co., Owatonna. Minn.
Mulsifyre—Nozzles. Grinnell Co., Inc., Providence, R. I.
Multalarm—Alarms. Automatic Control Co., St. Paul, Minn.
Multiblade—Welding fume exhausters. General Blower Co., Morton Grove, Ill.
Multiclone—Dust collectors. Western Precipitation Corp., Los Angeles, Calif.
Multi-Cold—Compressors. Multiplex Mfg. Co., Berwick, Pa.
Multi-Duty—Air filters. American Air Filter Co., Inc., Louisville, Ky.
Multi-Duty—Pulleys and sheaves. Gates Rubber Co., The, Denver, Colo.
Multiflex—Ducts and duct fittings. United States Rubber Co., New York, N. Y.
Multiguard—Electric motors. Lincoln Electric Co., The, Cleveland, O.
Multi-Louver—Drives. Link Belt Co., Chicago. Ill.
Multi Mount—Speed reducers. Sterling Electric Motors, Inc., Los Angeles, Calif.
Multi-Pak—Air filters. American Air Filter Co., Inc., Louisville, Ky.
Multiplane—Vibration isolating bases. Lord Mfg. Co., Erie, Pa.
Multiport—Valves. Permutit Co., The, A Div. of Pfaudler Permutit, Inc., New York, N. Y.
Multi-Pul—Hoists. Indus Corp., Indianapolis, Ind.
Multi-Seal—Repair plugs. Kenney Co., L. C., Chicago, Ill.
Multitemp—Boilers. Hydrotherm, Inc., Northvale, N. J.
Multitherm—Air conditioning units. Clarage Fan Co., Kalamazoo, Mich.
Multi-Tip—Gas burners. Dalzen Mfg. Co., St. Clair, Mich.
Multitube—Tubing. Crescent Insulated Wire & Cable Co., Trenton, N. J.
Multivane—Fans, blowers. Westinghouse Electric Corp., Sturtevant Div., Boston, Mass.
Multi-V-Drive—Drives. Worthington Corp., East Orange, N. J.
Multi-Wash—Dust collectors, washers. Schneible Co., Claude B., Detroit, Mich.
Multuri—Burners. Roberts-Gordon Appliance Corp., Buffalo, N. Y.
Murex—Welding electrodes. Metal & Thermit Corp., Rahway, N. J.

N-B—Boilers. Nebraska Boiler Co., Inc., Lincoln, Nebr.
NCG—Leak detectors, solder, oxygen systems, welding rod. National Cylinder Gas Div. of Chemetron Corp., Chicago, Ill.
N-M-D—Valves. Lunkenheimer Co., Cincinnati, O.
NYB—Heating surface, fans, unit heaters. New York Blower Co., Chicago, Ill.
Nail-A-Matic—Tools. Matrix Engineering Corp., Minneapolis, Minn.
Nalco—Solder. National Lead Co., New York.
Nalco—Water treatment, soot destroyers. National Aluminate Corp., Chicago, Ill.
National Ground Anodes—Devices. National Carbon Co., Div. of Union Carbide Corp., New York, N. Y.
National—Cutters, pipe cutting machines. Wachs Co., E. H., The, Chicago, Ill.
National—Fans, furnaces, heaters. MaGirl Foundry & Furnace Co., Bloomington, Ill.
Natorq—Seals. Navan Products, Inc., Los Angeles, Calif.
Natur Temp—Insulation. Plastergon Wall Board Co., Buffalo, N. Y.
Naturzone—Insulation. Wilson & Co., Inc., Chicago, Ill.
Navalon—Fiber packing. Johns-Manville, New York, N. Y.
N.E. Hite—Units. Barclay, Inc., Robert, Chicago, Ill.
Nelex—Electric heating cable. Nelson Electric Mfg. Co., Tulsa, Okla.
Nelson—Stokers, air diffusers, pumps, air conditioning units, ventilators. Heating Assurance, Inc., Spokane, Wash.
Nelsonaire—Unit ventilators. Herman Nelson Products, American Air Filter Co., Inc., Louisville, Ky.
Nelweld—Welders. Nelson Stud Welding Div., Gregory Industries, Inc., Lorain, O.
Nemo—Insulating cement. Smith & Kanzler Corp., Linden, N. J.
Neobon—Corrosion shields for pipe joints. Atlas Mineral Products Co., Mertztown, Pa.
Neo Coat—Coatings. Pennsalt Chemicals Corp., Philadelphia, Pa.
Neoprene—Protective coatings. Saran Lined Pipe Co., Ferndale, Mich.
Neo-Shear Mounts—Bases and pads. Vibration Mountings, Inc., Corona, N. Y.
Nerva-Kote—Protective coatings. Rubber and Plastics Compound Co., New York, N. Y.
Nerva-Plast—Protective coatings. Rubber and Plastics Compound Co., New York, N. Y.
Nervatape—Industrial tape. Rubber & Plastics Compound Co., New York, N. Y.
New Cyclone—Dust collectors. Kirk & Blum Mfg. Co., Cincinnati, O.
New Multifin—Radiation. American Radiator & Standard Sanitary Corp., Plumbing & Heating Div., New York, N. Y.
New Port—Pumps. Everite Pump & Mfg. Corp., Lancaster, Pa.
Newport—Air conditioning units. Webster & Co., Warren, Camden, N. J.
Niagara—Meters. Buffalo Meter Co., Buffalo.
Nib-Shear—Power shears. H. A. Mfg. Co., York, Pa.
Nickelend—Electrodes. Arcos Corp., Philadelphia, Pa.
Nickel-Arc—Electrodes. Alloy Rods Co., York. Pa.
Nickend—Electrodes. Arcos Corp., Philadelphia, Pa.
Nicloy—Pipe, tubes, tubing. Babcock & Wilcox Co., Tubular Products Div., Beaver Falls, Pa.
Nicuend—Electrodes. Arcos Corp., Philadelphia, Pa.
Nifer—Clad sheets. General Plate Div. Metals & Controls Corp., Attleboro, Mass
"9000" Arc—Torches. Mid-States Welder Mfg. Co., Chicago, Ill.
NiTectic—Arc welding electrodes. Eutectic Welding Alloys Corp., Flushing, N. Y.
No Crush—Hose. Ammerman Co., Inc., Stillwater, Minn.
No Drip—Insulation, insulating cement, protective coating. J. W. Mortell Co., Kankakee, Ill.
No Drip Tape—Pipe insulation, pipe wrap. Mortell Co., J. W., Kankakee, Ill.
Nocordal—Pipe coils, refrigerating condensers, and heat exchangers. Heil Process Equipment Corp., Cleveland, O.
No-Flex—Grilles, registers. Hart & Cooley Mfg. Co., Holland, Mich.
Nofome—Pumps. Ladish Co., Tri-Clover Div., Kenosha, Wis.
No-Mar—Pipe wrenches. Nielsen, Inc., E. V., Stamford, Conn.
Non-Clog—Sewage ejectors and pumps. Chicago Pump Co., Subsidiary of Food Machinery & Chemical Corp., Chicago, Ill.
Non-clog—Pipe line strainers. Boylston Steam Specialty Co., Chicago, Ill.
Non-Clogging—Spray nozzles. Link-Belt Co., Chicago, Ill.
Non-Con-Dux—Cement, insulation. Grant Wilson, Inc., Chicago, Ill.
Non-Frost—Insulation. Keasbey & Mattison Co., Ambler, Pa.
No-Nox—Absorbers. Beacon Brass Co., Waltham, Mass.
Non-Sweat—Insulation. Keasbey & Mattison Co., Ambler, Pa.
No-Ox-Id—Protective coatings. Dearborn Chemical Co., Chicago, Ill.
No-Ox-Id Warp—Protective coatings. Dearborn Chemical Co., Chicago, Ill.

Norblo—Dust collectors, fans. Northern Blower Co., Cleveland, O.
Norcoat—Tank linings. Norwood Associated Engineers, Inc., Springfield, Mass.
Nordensson—Burners. Roberts-Gordon Appliance Corp., Buffalo, N. Y.
Northco—Ventilators. Wood Mfg. Co., A. R., Luverne, Minn.
No-Spat—Welding compounds. Midland Paint & Varnish Co., Cleveland, O.
No-Thread—Fittings. Dresser Mfg. Div., Dresser Industries, Inc., Bradford, Pa.
Novelon—Protective coatings, tank linings. Ellicott Fabricators, Inc., Baltimore, Md.
No-Vent—Pumps and systems, circulators for hot water heating systems. Stout & Sons, David, St. Louis, Mo.
No Vision—Grilles. Independent Register Co., Cleveland, O.
Novoid—Insulation, adhesives, vibration isolating bases. National Cork Co., Englewood, N. J.
Nu-Air—Adsorbers. Manning Co., Charles E. Pittsburgh, Pa.
Nu-Air—Fans, window ventilator units, blades, louvers and shutters, radiation. Meier Electric & Machine Co., Inc., Indianapolis, Ind.
Nu-Alpina—Ventilators. Inland Steel Products Co.. Milwaukee, Wis.
Nullmatic—Gages, indicators, insulation, recorders. Moore Products Co., The, Philadelphia, Pa.
Nu-Notch—Mushroom ventilators, diffusers. Knowles Mushroom Ventilator Co., Upper Montclair, N. J.
NuTwist—Welders. P. R. Mallory & Co., Inc., Indianapolis, Ind.
Nu-Vac—Vacuum cleaners, dust collectors. Empire Chemical Products Co., Newark, N.J.
Nu-Wrap—Insulation. Keasbey & Mattison Co., Ambler, Pa.
Nyavco—Valves, gages. New York Air Valve Corp., Brooklyn, N. Y.
Nylaflow—Non-metal hose and fittings. Polymer Corp., The, Reading, Pa.
Nylasint—Plastics, powder and resins. Polymer Corp., Reading, Pa.
Nylatron—Plastics, powder and resins. Polymer Corp., Reading, Pa.
Nylo-Seal—Plastic tubing. Imperial Brass Mfg. Co., Chicago, Ill.

OB—Valves. Ohio Brass Co., Mansfield, O.
OCH—Filters. American Air Filter Co., Louisville, Ky.
OPW—Strainers. Jordan Corp., Div. of OPW Corp., Cincinnati, O.
O&S—Burners. Orr & Sembower, Inc., Reading, Pa.
OX—Sheet metal punches. Duro-Dyne Corp., Long Island, N. Y.
Oakmont-Oil—Boilers. American Radiator & Standard Sanitary Corp., Plumbing & Heating Div., New York, N. Y.
Ohioan—Heaters. Hotstream Heater Co., Cleveland, O.
Ohmstone—Panel and control boards. Johns-Manville, New York, N.Y.
Oil-A-Fire—Burners. Automatic Corp., St. Louis, Mo.
Oilbuster—Boiler cleaning compounds. Cannon Chemical Co., Inc., Cambridge, Mass.
Oil-O-Matic—Oil burners, heaters. Williams Oil-O-Matic Heating Co., Div. of National Union Electric Corp., Columbus, O.
Oiltex—Gaskets. Chicago Gasket Co., Chicago, Ill.
Okay Tred—Leather belting. Houghton & Co., E. F., Philadelphia, Pa.
Ol' Faithful—Humidifiers. Maid-O'-Mist, Inc., Chicago, Ill.
Omega—Joints. Marquette Coppersmithing Co., Philadelphia, Pa.
Omniguard—Temperature alarms. Edison Industries, Thomas A., Instrument Div., McGraw-Edison Co., West Orange, N. J.
On Mark—Seals. Navan Products, Inc., Los Angeles, Calif.
"100" Power Drive—Pipe cutting and threading machines. Oster Mfg. Co., Wickliffe, O.
"100" Power Vise—Pipe vise stands. Oster Mfg. Co., Wickliffe, O.
1 Way Weather Flo—Thermostats. Automatic Devices Co., Inc., Western Springs, Ill.
Opto-Matic—Oilers. Trico Fuse Mfg. Co., Milwaukee, Wis.
Oriflo—Flanges. Builders-Providence Div., B-I-F Industries, Inc., Providence, R. I.
Ori-Flowrator—Flow measuring orifices. Fischer & Porter Co., Hatboro, Pa.
"O" Rings—Packing. Linear Inc., Philadelphia, Pa.
Oversize—Refrigerant dehydrators. Wabash Corp., Chicago, Ill.
Oxequip—Oxygen systems, pumps, valves. Oxygen Equipment & Service Co., Chicago.
Ox-Gem—Treatment. Anderson Chemical Co., Inc., Macon, Ga.
Oxidizer—Filters. Purcolator Products, Inc., Rahway, N. J.
Oxweld—Welding rod, oxygen piping & regulating systems, torches, welding and cutting apparatus. Linde Co., Div. of Union Carbide Corp., New York, N. Y.
Oxyarc—Welding and cutting apparatus. Arcos Corp., Philadelphia, Pa.
Oxycuttend—Welding and cutting apparatus. Arcos Corp., Philadelphia, Pa.
Oyltite-Stik—Cements and compounds. Lake Chemical Co., Chicago, Ill.
Ozark—Refractories & refractory cement. Green Fire Brick Co., A. P., Mexico, Mo.
Ozite—Insulation. American Hair & Felt Co., Chicago, Ill.
Ozonators—Ozone apparatus. Welsbach Corp., The, Kitson Valve Div., Philadelphia, Pa.

PA 400—Dehydrant and acid neutralizer. W. R. Grace & Co., Davison Chemical Div., Baltimore, Md.
P. B. H.—Cocks, protectors, try cocks. Paul B. Huyette Co., Inc., Philadelphia, Pa.
P-D—Fittings. Sullivan Valve & Engineering Co., Butte, Mont.
P-D—Pumps. DeVilbiss Metal Fabricators Co., Detroit.
PD—Blowers, dust collectors, stacks and chimneys. Prat-Daniel Corp., Thermobloc Div., South Norwalk, Conn.
PD QC—Pipe machines. Bignall & Keeler Div., John Ramming Machine Co., St. Louis, Mo.
P.E.T.—Drills and motors. Portable Electric Tools, Inc., Chicago, Ill.
PG's—Coils and panels. American Brass Co., Waterbury, Conn.
P & H—Engines, hoists, arc welders. Harnischfeger Corp., Milwaukee, Wis.
P & H Smootharc—Arc welding electrodes. Harnischfeger Corp., Milwaukee, Wis.
P.I.V. Variable Speed Drive—Changer. Link-Belt Co., Chicago, Ill.
P-K—Eliminators. Patterson-Kelley Co., Inc., The. E. Stroudsburg, Pa.
P-R—Burners. Selas Corp. of America, Dresher, Pa.
PRC Rubber Calk—Caulking and sealing compounds. Products Research Co., Los Angeles, Calif.
PSC—Regulators, dehumidifiers. Perfecting Service Co., Charlotte, N. C.
Pace-King—Boilers. Burnham Corp., Irvington, N. Y.
Pacemaker—Softeners. Stover Water Softener Co., St. Charles, Ill.
Pacemakers—Coolers. McQuay, Inc., Minneapolis, Minn.
Pacific—Furnaces, heaters. Rosebraugh Co., W. W., Salem, Ore.
Package-Aire—Air conditioning units. United States Air Conditioning Corp., Delaware, O.
Packex—Sewage ejectors. Yeomans Bros. Co., Melrose Park, Ill.
Paco—Turbine pumps. Pacific Pumping Co., Oakland, Calif.
Page Sensor—Alarms. Hogart Engineering Co., Los Angeles, Calif.
Paget—Strainers. Self Cleaning Strainer Co., Oak Lawn, Ill.
PAINTGRIP—Sheets. Armco Steel Corp., Middletown, O.
Paintstiks—Identification markers. Markal Co., Chicago, Ill.
Paladin—Enamels and lacquers. Interchemical Corp., Finishes Div., Newark, N. J.
Palco—Packing. Greene, Tweed & Co., North Wales, Pa.
Palcotan—Water treatment. Pacific Lumber Co., The, San Francisco, Calif.
Palco Wool-Saferized—Insulation. Pacific Lumber Co.. The, San Francisco, Calif.
Palladrin-Mastic—Tank linings. Emjay Maintenance Engineers, Rutherford, N. J.
Palm-Aire—Air conditioning units. Palmer Mfg. Corp., Phoenix, Ariz.
Palmetto—Packing, gaskets, shaft seals. Greene, Tweed & Co., North Wales, Pa.
Palmetto G-T Ring—Packing. Greene, Tweed & Co., North Wales, Pa.
Palmetto SuperSheat—Gaskets, packing. Greene, Tweed & Co., North Wales, Pa.
Pandux—Thermometer wells. Pacific Transducer Corp., Los Angeles, Calif.
Panelair—Heaters. Payne Company, La Puente, Calif.
Panelbloc—Heaters, radiators. Prat-Daniel Corp., Thermobloc Div., South Norwalk, Conn.
Panel Coil—Coils, dryers, exchangers, heaters. Dean Thermo-Panel Coil Div., Dean Products, Inc., Brooklyn, N.Y.
Panelouvre—Door grilles. Ventilouvre, Inc., Marietta, O.
Panelray—Heaters. Day & Night Mfg. Co., La Puente, Calif.
Panel-Tex—Panel and control boards. Norristown Asbestos Div., Nicolet Industries, Inc., Norristown, Pa.
Paneltrol—Valves. Taco Heaters, Inc., Cranston, R. I.
Panther—Plastic pipes. Western Plastics Corp., Tacoma, Wash.
Papco—Cutters and tools. Penn Brass & Copper Co., Erie, Pa.
Paracoil—Coils, condensers, heaters, leak detectors, oil coolers, exchangers, preheaters, steam traps, pipe nipples, water chillers, aftercoolers, heating units, valves, vaporizers. Davis Engineering Corp., Elizabeth, N. J.
Para-flex—Couplings. Dodge Mfg. Corp., Mishawaka, Ind.
Paraflo—Air diffusers. Barber-Colman Co., Rockford, Ill.
Paraline—Motor bases. Allis-Chalmers Mfg. Co., Milwaukee, Wis.
Parallel Shaft—Reducers and increasers. Link-Belt Co., Chicago, Ill.
Paramount Master—Air conditioning units. Essick Mfg. Co., Los Angeles, Calif.
Parasol—Spray nozzles. Spraying Systems Co., Bellwood, Ill.
Pathfinder—Belting. Goodyear Tire & Rubber Co., Akron, O.
Peak-Temp—Preheaters, fuel oil. Cleaver-Brooks Co., Milwaukee, Wis.
Peck Carrier—Conveyors. Link-Belt Co., Chicago, Ill.
Pee Vee Cee—Fittings, hoods, plastic pipe. Atlas Mineral Products Co., Mertztown, Pa.
Pee Vee Seal—Cement and compounds. Atlas Mineral Products Co., Mertztown, Pa.
Peerless—Pipe machines. Bignall & Keeler Div., John Ramming Machine Co., St. Louis, Mo.
Peerless—Direct radiation. American Radiator & Standard Sanitary Corp., Plumbing & Heating Div., New York, N. Y.
Pelro—Asbestos packing. Greene, Tweed & Co., North Wales, Pa.
Pemoc—Cleaning compounds. Peters Co., The, Div. of Toledo Paint & Chemical Co., Toledo, O.
Penflex—Hose, flexible, tubing. Pennsylvania Flexible Metallic Tubing Co., Philadelphia, Pa.
Penflex-Weld—Adsorbers. Pennsylvania Flexible Metallic Tubing Co., Philadelphia, Pa.
Pennco—Sectional cast iron boilers. Pennsylvania Furnace & Iron Co., Warren, Pa.
Perchloron—Water and chemical treatment. Pennsalt Chemicals Corp., Philadelphia, Pa.
Percojet—Wall heaters. Electric Heating & Cooling, Inc., Newark, N. J.
Perfectaire—Dehumidifiers, fans, furnaces, heaters, louvers and shutters, air conditioning units, ventilators. Air Conditioning Engineering Co., Cambridge, Mass.
Perfection—Plates. Beaton & Cadwell Mfg. Co., New Britain, Conn.
Perfecto—Observation boiler ports, cement. Green Fire Brick Co., A. P., Mexico, Mo.
Perfecto—Insulation. Philip Carey Mfg. Co., Lockland, Cincinnati, O.
Perflex—Hose. Perfecting Service Co., Charlotte, N. C.
Perfusaire—Diffusers, registers. Auer Register Co., Cleveland, O.
Perimaheat—Radiation. Young Radiator Co., Racine, Wis.
Perma-Code—Identification markers, pipe, hole and saddle markers. Brady Co., W. H., Milwaukee, Wis.
Permadine—Protective coatings. Amchem Products, Inc., Ambler, Pa.
Perma-Fan—Condensers. Drayer-Hanson, Div. of National-U. S. Radiator Corp., Los Angeles, Calif.
Permagum—Adhesives. Presstite-Keystone Engineering Products Co., A Div. of American-Marietta Co., St. Louis, Mo.
Perm-Align—Drills. Oster Mfg. Co., John, Milwaukee, Wis.
Permaline—Pipe, conduits. Line Material Industries, McGraw-Edison Co., Milwaukee, Wis.
Permanent Pyro—Anti-freeze compounds. Olin Mathieson Chemical Corp., Chemicals Div., Baltimore, Md.
Permanite—Plastic pipe, ducts and duct fittings, and valves. Knight, Maurice A., Akron, O.
Permaseal—Gaskets. Chicago Gasket Co., Chicago, Ill.
Permatower—Cooling towers. Marley Co., The, Kansas City, Mo.
Pero-Klean—Cleaning compounds, treatment. Perolin Co., Inc., The, New York, N. Y.
Pero-Nite—Soot destroyers. Perolin Co., Inc., New York, N. Y.
Pet-Re-Nol—Fuel oil treatment to prevent sludge. Normal Chemical Co., St. Paul, Minn.
Pexto—Brakes, punches, shears, wrenches, machines. Peck, Stow & Wilcox Co., Southington, Conn.
Phantom-Dial-o-Vent—Exhaust fittings. National System of Garage Ventilation, Inc., Decatur, Ill.
Phenolex—High temperature paint. Claronex Products, Inc., Brooklyn, N. Y.
Philatrol—Changers, feeders. Philadelphia Pump Div., American Meter Co., Philadelphia, Pa.
Phil-O-Feeder—Feeders. Philadelphia Pump Div., American Meter Co., Philadelphia, Pa.
Phoson—Solder. United Wire & Supply Corp., Cranston, R. I.

Phos-Trode—Electrodes. Ampco Metal, Inc., Milwaukee, Wis.
Phostube—Solder. All-State Welding Alloys Co., Inc., White Plains, N. Y.
Photoswitch—Switches. Electronics Corp. of America, Cambridge, Mass.
Pilostat—Flame failure controls. Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.
Pilotair—Valves. Westinghouse Air Brake Co., Industrial Products Div., Wilmerding, Pa.
Pilot—Valves. Powell Co., Wm., The, Cincinnati, O.
Pin-Tite—Fasteners. Taft Jenkins Co., Inc., Holyoke, Mass
Pioneer—Thermostats. Crown Controls Co., Inc., New Bremen, O.
Pipeasy—Pipe Cement. Flexrock Co., Philadelphia, Pa.
Pipe Line—Strainers. Anderson Co., V. D., The, Div. of International Basic Economy Corp., Cleveland, O.
Pipeliner—Torches, welding and cutting apparatus. Smith Welding Equipment Corp., Minneapolis, Minn.
Pipemaster—Wrenches, pipe vise stands, pipe cutters and vises. Erie Tool Wks., Erie, Pa.
Pipetite-Stik—Cements and compounds. Lake Chemical Co., Chicago, Ill.
Pipewrap—Pipe insulation. Pittsburgh Plate Glass Co., Pittsburgh, Pa.
Pistonair—Motors. Joy Mfg. Co., Pittsburgh, Pa.
Pitchlign—Roller bearings. Roller Bearing Co. of America, West Trenton, N. J.
Pittsburgh-National—Meters. Rockwell Mfg. Co., Meter & Valve Div., Pittsburgh, Pa.
Plain—Radiation. Vapor Heating Corp., Chicago, Ill.
Planeweld—Electrodes. Lincoln Electric Co., The, Cleveland, O.
Plascene—Wire. Chester Cable Corp., Chester, N. Y.
Plas-Dux—Caulking and sealing compounds. Babbitt Chemical Co., Inc., New Bedford, Mass.
Plasgon—Cement and compounds. Samuel Cabot, Inc., Boston, Mass.
Plaskon—Plastics, powders and resins. Barrett Div., Allied Chemical & Dye Corp., New York, N. Y.
Plastic Gasket—Pipe cement. Flexrock Co., Philadelphia, Pa.
Plasticord—Wiring. Chester Cable Corp., Chester, N. Y.
Plasticore—Wire. Chester Cable Corp., Chester, N. Y.
Plasticote—Electric wire. Chester Cable Corp., Chester, N. Y.
Plastilock—Adhesives. Goodrich Industrial Products Co., B. F., Akron, O.
Plastimode—Sheets. Plastipipe, Products of Plastic Process Co., Div. of Monadnock Mills, Los Angeles, Calif.
Plastograph—Viscometers. Brabender Corp., Rochelle Park, N. J.
Plastoid—Furnace cement, caulking & sealing compounds. Plastic Products Co., Detroit, Mich.
Pla-Tank—Ducts and duct fittings, plastic sheets, plastic tubing. Haveg Industries, Inc., Wilmington, Del.
Platecoils—Coils and radiation, exchangers, heaters, finned surface, superheaters. Tranter Mfg., Inc., Lansing, Mich.
Plateform—Vibration isolating bases. Lord Mfg. Co., Erie, Pa.
Plexiform—Fans. Bayley Blower Co., Milwaukee, Wis.
Plica—Hose, tubing. Flexaust Co., New York, N. Y.
Plicast—Refractories. Plibrico Co., Chicago, Ill.
Plidco-Flanges—Fittings, flanges. Pipe Line Development Co., Cleveland, O.
Pliogard—Protective coatings. Saran Lined Pipe Co., Ferndale, Mich.
Pliotron—Filters. Goodyear Tire & Rubber Co., Akron, O.
Plisulate—Insulating cement and insulation. Plibrico Co., Chicago.
Plumber Krak-Stik—Cement and compounds. Lake Chemical Co., Chicago, Ill.
Pluralloy—Electrodes. McKay Co., Pittsburgh, Pa.
Pluto-Blue Asbestos—Packing. North American Asbestos Corp., Chicago, Ill.
Ply-Tech—Plywood sheets and board. Technical Ply-Woods Sales, Chicago, Ill.
Pneumadiesel—Air compressors. Schramm, Inc., West Chester, Pa.
Pneumapower—Air compressors. Schramm, Inc., West Chester, Pa.
Pneumastat—Aftercoolers. Schramm, Inc., West Chester, Pa.
Pneumatractor—Aftercoolers. Schramm, Inc., West Chester, Pa.
Pneu-Pump—Pumps. Yeomans Bros. Co., Melrose Park, Ill.
Poeco—Insulation, coatings, concrete insulating. Poe Co., C. W., Cleveland, O.
Polar Pak—Air conditioning units. Coleman Co., Inc., The, Wichita, Kans.
Polartron—Relays, regulators, systems, switches. Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.
Pollux—Meters. Air-Conditioning Equipment Corp., New York, N. Y.
Polyfax—Protective coatings, enamels and lacquers. Interchemical Corp., Finishes Div., Newark, N. J.
Poly-Flo—Plastic tubing. Imperial Brass Mfg. Co., Chicago, Ill.
Polymerin—Protective coatings, enamel and lacquers. International Corp., Finishes Div., Newark, N. J.
Polypenco—Plastic pipe, tubing. Polymer Corp., The, Reading, Pa.
Polyprene—Protective coatings, enamels and lacquers. Interchemical Corp., Finishes Div., Newark, N. J.
Polystix—Adhesives. Adhesive Products Corp., New York, N. Y.
Polytherm—Protective coatings, enamels and lacquers. Interchemical Corp., Finishes Div., Newark, N. J.
Pony—Pipe clamps. Adjustable Clamp Co., Chicago, Ill.
Popular—Wrenches. Trimont Mfg. Co., Div. of St. Pierre Chain Corp., Worcester, Mass.
Poro-Klean—Filters. Cuno Engineering Corp., Meriden, Conn.
Poronze—Filters and porous metals. Wabash Corp., Chicago.
Poro-Stone—Filters, dehumidifiers. Adams Co., Inc., R. P., Buffalo, N. Y.
Porta-Heet—Heaters. Auburn Burner Co., Auburn, Ind.
Port-A-Pony—Pipe cutting machines. Thread-Ezy Mfg. Co., Corunna, Mich.
Porta Drive—Pipe cutting machines. Muncie Gear Wks., Inc., Muncie, Ind.
Porto-Power—Pipe benders and pipe pushers, pumps, punches. Blackhawk Mfg. Co., Milwaukee, Wis.
Porto Shears—Shears. Black & Decker Mfg. Co., Towson, Md.
Portovent—Hose, duct connections, ducts and duct fittings. Flexaust Co., New York, N. Y.
Positive Arc—Arc welders. Welding Apparatus Co., Chicago, Ill.
Power—Belting. Rhoads & Sons, J. E., Wilmington, Del.
Poweraire—Furnaces. Jackson & Church Co., Saginaw, Mich.
Powerated—Furnaces. Jackson & Church Co., Saginaw, Mich.
Powered Low-Line—Ventilators. Swartwout Co., The, Cleveland, O.
Powered Valvent—Ventilators. Swartwout Co., The, Cleveland, O.
Power-Flame—Leak detectors. Justrite Mfg. Co., Chicago, Ill.
Power-Flow—Ventilators. DeBothezat Fans Div., American Machine & Metals, Inc., East Moline, Ill.
Power Gems—Boilers. Edge Moor Iron Works, Inc., Edge Moor, Del.
Power King—Belts. Goodall Rubber Co., Trenton, N. J.
Power Master—Boilers. Orr & Sembower, Inc., Reading, Pa.
Poweroil—Oil burners. Jackson & Church Co., Saginaw, Mich.
Power-Pak—Boilers. Orr & Sembower, Inc., Reading, Pa.
Power-Poise Line—Electric motors. Brown-Brockmeyer Co., Inc., Dayton, O.
Power Vane CP—Drills, motors. Chicago Pneumatic Tool Co., New York, N. Y.
Power vent—Roof ventilators. Octagon Ventilator Co., Chicago, Ill.
Powrdraulic—Cylinders. Hanna Engineering Wks., Chicago, Ill.
Powrmatic—Cylinders. Hanna Engineering Wks., Chicago, Ill.
Praetorian—Unit ventilators. Valveblower Co. of Calif., Santa Fe Springs, Calif.
Prasco—Insulation, insulating cement. Pabco Industrial Insulations Div., Fibreboard Paper Products Corp., San Francisco, Calif.
Pratt & Cady—Valves. R-P & C Valve Div., American Chain & Cable Co., Inc., Reading, Pa.
Pre-Bilt—Conveyors. Link-Belt Co., Chicago, Ill.
Precision—Nozzles. Benjamin Air Rifle Co., St. Louis, Mo.
Precisionaire—Diffusers, grilles, registers. Bowman Co., Inc., D. F., Clearwater, Fla.
Pre-Fab-Ric—Connections. Cain Mfg. Co., Birmingham, Ala.
Pre-Krete—Coatings, tank linings. Patterson-Kelley Co., Inc., The, E. Stroudsburg, Pa.
Premier—Welding rod. American Steel & Wire Div., United States Steel, Cleveland, O.
Prep—Protective coatings for metals. Neilson Chemical Co., Detroit (Ferndale), Mich.
Presslok—Nylon pipe fittings. Nylon Moulding Corp., Garwood, N. J.
Pressure Clix—Switches. Nason Co., Clarkston, Mich.
Pressure-Speed—Parts for heating and air conditioning equipment. Refrigeration Devices Co., Nutley, N. J.
Pressuretrol—Switches. Minneapolis-Honeywell Regulator Co., Minneapolis.
Pressurmite—Switches. Friez Instrument Div., Bendix Aviation Corp., Towson, Baltimore, Md.
Prest-O-Lite—Leak detectors, torches. Linde Co., Div. of Union Carbide Corp., New York, N. Y.
Presto-Lock—Couplings. Smith Bros. Co., Oak Park, Ill.
PreSwitch—Switches. Longergan Co., J. E., Philadelphia, Pa.
Princo—Gages, alarms, hygrometers, manometers, psychrometers, regulators, relays, thermometers. Precision Thermometer and Instrument Co., Philadelphia, Pa.
Progress—Boilers. Cleaver-Brooks Co., Milwaukee, Wis.
Propeloflo—Meters. Builders-Providence Div., B-I-F Industries, Inc., Providence, R. I.
Protecto—Insulation. Philip Carey Mfg. Co., Lockland, Cincinnati, O.
Protectoglo—Controls. Minneapolis-Honeywell Regulator Co., Industrial Div., Philadelphia, Pa.
Protectomotor—Air filter separators. Dollinger Corp., Rochester, N. Y.
Protectorelay—Flame failure controls, relays. Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.
Protekto-Flex—Insulation. Devices, Inc., A Div. of Miracle Adhesives Corp., Bellmore, N. Y.
Protektinsul—Protective coatings. Devices, Inc., A Div. of Miracle Adhesives Corp., Bellmore, N. Y.
Pryzoak—Belting. Graton & Knight Co., Worcester, Mass.
Psychron—Psychrometers. Friez Instrument Div., Bendix Aviation Corp., Baltimore, Md.
Pubco—Valves. California Brass Mfg. Co., Los Angeles, Calif.
Pul Air—Ventilators. Penn Ventilator Co., Philadelphia, Pa.
Pul-Air Ridge—Ventilators. Penn Ventilator Co., Philadelphia, Pa.
Pulling—Circulators, pumps. Columbus Steam Pump Works Co., Columbus, O.
Pulsafeeder—Pumps. Lapp Insulator Co., Le-Roy, N. Y.
Pulsatherm—Thermostats. Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.
Pump King—Pumps. Ladish Co., Tri-Clover Div., Kenosha, Wis.
Punkah Louvres—Air diffusers. Thermotank, Inc., Products Div., Detroit, Mich.
PurAir—Adsorbers, air filters, air sterilizing units, ventilators. Barnebey-Cheney Co., Columbus, O.
Purecel—Filters. Proportioneers, Inc., Div. of B-I-F Industries, Inc., Providence, R. I.
Purj-All—Compounds. Lindy Heaters, Inc., New York, N. Y.
Purox—Welding and cutting apparatus, torches. Linde Co., Div. of Union Carbide Corp., New York, N. Y.
Pylets—Switches pilot and signal lights. Pyle-National Co., The, Chicago, Ill.
Pyramid—Packing. Greene, Tweed & Co., North Wales, Pa.
Pyratherm—Controls. Mercoid Corp., The, Chicago Ill.
Pyrex—Glass pipe, electric heating panels, heaters, thermometer wells, heat exchangers, gage and sight glasses, valves. Corning Glass Wks., Corning, N. Y.
Pyrocouple—Thermometers. Royco Instruments, Palo Alto, Calif.
Pyroflex—Coatings, tank linings, lined pipes, tanks, enamels and lacquers. Knight, Maurice A., Akron.
Pyrojector—Ventilators. Swartwout Co., The, Cleveland, O.
Pyroprobes—Thermometers. Royco Instruments, Palo Alto, Calif.
Pyrotac—Alarms. Illinois Testing Laboratories, Inc., Chicago, Ill.
Pyrotemps—Thermometers. Royco Instruments, Palo Alto, Calif.
Pyrotrol—Flame failure controls. Bristol Co., The, Waterbury, Conn.
Pyrotron—Recorders. Bailey Meter Co., Cleveland, O.
Pyrovisor—Controls. Bristol Co., The, Waterbury, Conn.

QD—Pulleys and sheaves. Worthington Corp., East Orange, N. J.
QSU—Couplings. Dahl, G. W., Bristol, R. I.
QS—Separators, drains, eliminators, regulators, valves. Quality Specialty Co., Inc., Camden, N. J.
Q-T—Sheets and Boards, non-metallic. Celotex Corp., The, Chicago, Ill.
Q-T Ductliner—Insulation, absorbers. Celotex Corp., The, Chicago, Ill.
Q-Chromastic—Refractories. Quigley Co., Inc., New York, N. Y.
Q-Chrome—Refractories. Quigley Co., Inc., New York, N. Y.
Q-Seal—Cement. Quigley Co., Inc., New York, N. Y.
Q-Seal-Damit—Boiler sealing compounds. Quigley Co., Inc., New York, N. Y.
Quaker—Heaters. Mor-Flo Heater Corp., Cleveland, O.

Quantrol—Vanes. Register & Grille Mfg. Co., Inc., Brooklyn, N. Y.
Quartzoid—Sprinkler heads. Grinnell Co., Inc., Providence, R. I.
Quick Action—Holders and files. Geneva Mfg. Co., South Elgin, Ill.
Quick-as-Wink—Valves. C. B. Hunt & Son, Inc., Salem, O.
Quiet Duct—Sound absorbers. International Aer Acoustics, New York, N. Y.
Quiet-Flex—Absorbers, hose, joints. Vibration Mountings, Inc., Corona, N. Y.
Quiet Kool—Air conditioning units. Emerson Radio & Phono Corp., Jersey City, N. J.
Quiet Vent—Sound absorbers. International Aer Acoustics, New York, N.Y.
Quik Heter—Electric heating panels. Adam Electric Co., **Frank, St. Louis, Mo.**
Quik-Mask—Gaskets. Brady Co., W. H., Milwaukee, Wis.
Quik-Plates—Nameplates. Brady Co., W. H., Milwaukee, Wis.
Quik-Temp—Steam traps. Schaub Engineering Co., Fred H., Chicago, Ill.

RBC—Roller bearings. Roller Bearing Co. of America, West Trenton, N. J.
RB Bases—Noise elimination for cooling towers. Vibration Mountings, Inc., Corona, N. Y.
RB Integral Fan Bases—Bases and pads. Vibration Mountings, Inc., Corona, N. Y.
RB Pressure—Pressure blowers. Western Blower Co., Seattle, Wash.
RB Vibration Rails—Bases and pads. Vibration Mountings, Inc., Corona, N. Y.
RC Geared—Couplings. Link-Belt Co., Chicago, Ill.
R & G—Grilles, registers. Register & Grille Mfg. Co., Inc., Brooklyn, N. Y.
RH—Air conditioning units. McQuay, Inc., Minneapolis, Minn.
RHB Hanger—Absorbers, hangers. Vibration Mountings, Inc., Corona, N. Y.
R. I.—Unions. Rhode Island Fittings Co., Providence, R. I.
R & I—Cement, insulation, refractories and refractory cement. Refractory & Insulation Corp., New York, N. Y.
R & I Super #3000—Refractories and refractory cement. Refractory & Insulation Corp., New York, N. Y.
R-K—Regulators, valves. Ruggles-Klingemann Mfg. Co., Boston, Mass.
R-M—Packing. Raybestos-Manhattan, Inc., Passaic, N. J.
R & M All-Weather—Motors. Robbins & Myers, Inc., Springfield, O.
R & M Moyno—Pumps. Robbins & Meyers, Inc., Springfield, O.
RP—Air filters. Research Products Corp., Madison, Wis.
RP Grease—Air grease filters. Research Products Corp., Madison, Wis.
RP Super Filter Coat—Oils. Research Products Corp., Madison, Wis.
R/S Controls—Valves. Refrigerating Specialties Co., Chicago, Ill.
RSH Hanger—Absorbers, hangers. Vibration Mountings, Inc., Corona, N. Y.
"R-Z-U" Jr.—Boilers. Fitzgibbons Boiler Co., Inc., New York, N. Y.
Ra bloc—Treatment. Turco Products, Inc., Los Angeles, Calif.
Racon Boilers—Heaters. Radiant Heat & Cooling Corp., Santa Clara, Calif.
Racon Kit—Coils and panels. Radiant Heat & Cooling Corp., Santa Clara, Calif.
Radiafin—Finned tubing, finned surface. Schutte and Koerting Co., Cornwells Heights, Bucks County, Pa.
Radial—Unit coolers. McQuay, Inc., Minneapolis, Minn.
Radiant—Direct radiation. Burnham Corp., Irvington, N. Y.
Radiant Baseboard—Radiation. National-U.S. Radiator Corp., Johnstown, Pa.
Radiantrim—Radiation. American Radiator & Standard Sanitary Corp., Plumbing & Heating Div., New York, N. Y.
RadiaVector—Radiation. Dunkirk Radiator Corp., Dunkirk, N. Y.
Radi-Heator—Heaters. Summit Products Co., Uniontown, Pa.
Radi-Ion—Ionization apparatus. Montgomery Bros., San Francisco, Calif.
Radiox—Fan housings. Torrington Mfg. Co., The, Torrington, Conn.
Radi - Vector—Radiation. Vulcan Radiator Co., Hartford, Conn.
Radolite—Cement, refractories. Pyrolite Products Co., Cleveland, O.
Rador—Thermostats. Vapor Heating Corp., Chicago, Ill.
Rajah—Packing. Johns-Manville, New York, N. Y.
Ramiclase—Refractories and refractory cement. Basic Inc., Cleveland, O.
Ramset—Refractories and refractory cement. Basic Inc., Cleveland, O.
Ramex—Drills, regulators, tools. Nielsen, Inc., E. V., Stamford, Conn.
Ranarex—Analyzers, indicators, recorders. Permutit Co., A Div. of Pfaudler Permutit, Inc., New York, N. Y.

Rancho—Propeller fans. Belco Industries, Inc., St. Louis, Mo.
Rangaire—Refrigerating condensers. Cobell Industries, Inc., Cleburne, Tex.
Range—Air filters. American Air Filter Co., Inc., Louisville, Ky.
Rannex—Indicators. Permutit Co., The, A. Div. of Pfaudler Permutit, Inc., New York, N. Y.
Rapid—Oil coolers. Bell & Gossett Co., Morton Grove, Ill.
Rapiduction—Pipe cutting machines. Oster Mfg. Co., Wickliffe, O.
Rapiduction Jr.—Pipe cutting and threading machines. Oster Mfg. Co., Wickliffe, O.
Ratex—Speed changers. Custanite Corp., Brooklyn, N. Y.
Ratiomotor—Gear—motors. Boston Gear Works, Quincy, Mass.
Ratogate—Valves. Fischer & Porter Co., Hatboro, Pa.
Ratosight—Alarms, flow switches. Fischer & Porter Co., Hatboro, Pa.
Raydiant—Radiation. Weil-McLain Co., Michigan City, Ind.
Rayduct—Pipe. Bethlehem Steel Co., Bethlehem, Pa.
Ray-Vec—Electric heating panels. Electrend Products Corp., St. Joseph, Mich.
Readi-Fin—Tubing. Reading Tube Corp., New York, N. Y.
Reading—Fittings, valves. R-P & C Valve Div., American Chain & Cable Co., Inc., Reading, Pa.
Ready Heat—Electric heating cable. Cox & Co., Inc., New York, N. Y.
Ready-Pack—Clamps. Dresser Mfg. Div., Dresser Industries, Inc., Bradford, Pa.
Reco—Steam convertors, heat exchangers, headers, heaters, preheaters, tanks, fuel economizers, separators. Richmond Engineering Co., Richmond, Va.
Reco—Controllers and starters, motors, coils, drains, water filters. Reynolds Electric Co., River Grove, Ill.
Reco-Radi-Aire—Fans. Reynolds Electric Co., River Grove, Ill.
Record-O-Stat—Recorder-controllers. Johnson Service Co., Milwaukee, Wis.
Rectilinear—Burners. Webster Engineering Co., Tulsa, Okla.
Red Cap—Ventilators. Warner Ventilator Co., La Grange, Ind.
Red Devil—Adhesives, furnace, and pipe joint cement. Pecora Inc., Philadelphia, Pa.
Red Diamond—Refrigerants, welders. Liquid Carbonic Div. of General Dynamics Corp., Chicago, Ill.
Red Head—Tongs. Billings & Spencer Co., Hartford, Conn.
Red Head—Valves. Imperial Brass Mfg. Co., Chicago, Ill.
Redi-Bends—Coils. Capitol Mfg. & Supply Co., Columbus, O.
Redi-Return—Pumps. American-Marsh Pumps, Inc., Battle Creek, Mich.
Redi-Vac—Pumps. American-Marsh Pumps, Inc., Battle Creek, Mich.
Red-Reading-Mercury—Hygrometers, psychrometers, thermometers. Palmer Thermometers, Inc., Cincinnati, O.
Red Seal—Gaskets. Chicago Gasket Co., Chicago Ill.
Red Socket—Wrenches. Lowell Wrench Co., Worcester, Mass.
Red Top—Thermostats. H-B Instrument Co., Philadelphia, Pa.
Red Top—Insulation. United States Gypsum Co., Chicago, Ill.
Red Top—Hangers and supports. Leibfried Mfg. Corp., C. H., Brooklyn, N. Y.
Red Top—Valves. Beacon Brass Co., Waltham, Mass.
Reductors—Reducers. Boston Gear Works, Quincy, Mass.
Redycote—Coatings. Southport Paint Co., Div. Wesson Oil & Snowdrift Co., Inc., Savannah, Ga.
Refrak—Burners. Selas Corp. of America, Dresher, Pa.
Refrigerated Kooler-Aire—Air conditioning units. United States Air Conditioning Corp., Delaware, O.
Rego—Regulators, torches, welding and cutting apparatus. National Cylinder Gas Div. of Chemetron Corp., Chicago, Ill.
ReGalv—Coatings. Rotometals, San Francisco, Calif.
Relatrol—Heating systems. Automatic Timing & Controls, Inc., King of Prussia, Pa.
Reliance—Belting, packing. Chicago Belting Div., Chicago-Allis Mfg. Corp., Chicago, Ill.
Reliance—Filters and regulators. American Meter Co., Inc., Philadelphia, Pa.
Remotaire—Air conditioning units. American Radiator & Standard Sanitary Corp., Plumbing & Heating Div., New York, N. Y.
Renewo—Valves, boiler gage cocks. Lunkenheimer Co., Cincinnati, O.
Renu-Glas—Air filters. American Air Filter Co., Inc., Louisville, Ky.
Renu-Vent—Air filters. American Air Filter Co., Inc., Louisville, Ky.
Rep—Boiler Compounds. Kenite Laboratory, Madison, N. J.

Reps—Extractors. Walton Co., Hartford, Conn.
Research—Belting. Graton & Knight Co., Worcester, Mass.
Resiscote—Enamels and lacquers. Reilly Tar & Chemical Corp., Indianapolis, Ind.
Return-Aire—Humidifiers. HERRmidifier Co., Neffsville, Pa.
Revent—Valves. Beacon Brass Co., Waltham, Mass.
Revolving—Heaters. Wing Mfg. Co., L. J., New York, N. Y.
Revolving—Ventilators. Burt Mfg. Co., Akron, O.
Rex—Bearings. Shafer Bearing, Div. of Chain Belt Co., Downers Grove, Ill.
Rex—Chain drives, coal and ash conveyors, couplings, nozzles, bearings, pumps. Chain Belt Co., Milwaukee, Wis.
Rex—Heaters. Cleveland Heaters Co., Cleveland, O.
Rex—Fans, ventilators, wheels. Air Controls, Inc., Div. of Cleveland Heater Co., Cleveland, O.
RexAir—Burners. Reif-Rexoil, Inc., Buffalo, N. Y.
Rexarc—Electrodes, positioners and welders, welding compounds. Sight Feed Generator Co., West Alexandria, O.
Rex-Flex—Hose, and tubing. **Flexonics Corp.,** Maywood, Ill.
Rexglas—Water heaters. The Cleveland Heater Co., Cleveland, O.
RexHeat—Heaters. Reif-Rexoil, Inc., Buffalo, N. Y.
RexPak—Boilers. Reif-Rexoil, Inc., Buffalo, N. Y.
Rexrust—Protective coatings. Continental Products Co., Euclid, O.
Rex-Tube—Duct connections, duct fittings, hose, and tubing. Flexonics Corp., Maywood, Ill.
Rex-Weld—Hose and tubing. Flexonics Corp., Maywood, Ill.
Rexweld—Electrodes. Crucible Steel Co. of America, Pittsburgh, Pa.
Rezistal—Sheets. Crucible Steel Co. of America, Pittsburgh, Pa.
Rhinamel—Enamels and lacquers. Tropical Paint Co., Cleveland, O.
Rhino—Caulking and sealing compounds. Pecora Inc., Philadelphia, Pa.
Ribbon Heat—Electric heating cable. Cox & Co., Inc., New York, N. Y.
Richducts—Ducts and duct fittings. Richkraft Co., Chicago, Ill.
Richflex—Vapor barriers, insulation. Richkraft Co., Chicago, Ill.
Richfoil—Insulation. Richkraft Co., Chicago, Ill.
Richlite—Vapor barriers. Richkraft Co., Chicago, Ill.
Ridgevent—Roof ventilators. Octagon Ventilator Co., Chicago, Ill.
Ridgid—Pipe cutting machines, pipe cutting oil, drives, extractors, stocks & dies, stands, wrenches, cutters, chasers, reamers, vises. Ridge Tool Co., Elyria, O.
Ridgoilr—Oiler unit. Ridge Tool Co., Elyria, O.
Rifco—Unions. Rhode Island Fittings Co., Providence, R. I.
Riflex—Vibration absorbers. United Metal Hose Co., Inc., Long Island City, N. Y.
Rigidon—Pipe, ducts, hoods. Heil Process Equipment Corp., Cleveland, O.
Rigid-Tex-Metals—Sheets. Rigidized Metals Corp., Buffalo, N. Y.
Rigivin—Plastic pipe, hoods. Heil Process Equipment Corp., Cleveland, O.
Rihco—Humidifiers. R. I. Humidifier & Ventilating Co., Inc., Cambridge, Mass.
Rincontrol—Enamels and lacquers, protective coatings. Interchemical Corp., Finishes Div., Newark, N. J.
Rimcor—Controls, indicator-controllers, smoke alarms, regulators, systems. Reliance Instrument Mfg. Corp., Glen Cove, Long Island, N. Y.
Ring-Tite—Couplings. Johns-Manville, New York, N. Y.
Rip-pl—Enamels and lacquers. Hilo Varnish Corp., Div. of Carpenter-Morton Co., Everett, Mass.
Ripple-Fin—Cooling and heating surface. McQuay, Inc., Minneapolis, Minn.
Risselt—Air eliminators. Moreheat Distribution, Inc., Cincinnati, O.
Rite-Flo—Diffusers, grilles, registers. Lenly Mfg. Co., Inc., Los Angeles, Calif.
Riviera—Air conditioning units. Webster & Co., Warren, Camden, N. J.
Robot—Switches. Miller-Harris Instrument Co., Milwaukee, Wis.
Robot-Eye—Regulators, smoke alarms. Standard Instrument Div., Heat-Timer Corp., New York, N. Y.
Rock cork—Pipe insulation. Johns-Manville, New York, N. Y.
Rocksil—Insulation. North American Asbestos Corp., Chicago, Ill.
Rocop—Heaters. Rome-Turney Radiator Co., Rome, N. Y.
Rod Pak—Electrodes. Marquette Mfg. Co., Inc., Minneapolis, Minn.

Ro-Fin—Tubing. Rome-Turney Radiator Co., Rome, N. Y.
Ro-Flo—Compressors, pumps. Allis-Chalmers Mfg. Co., Milwaukee, Wis.
Rolagrip—Couplings. Gustin-Bacon Mfg. Co., Kansas City, Mo.
Rol-Air—Tools. Imperial Brass Mfg. Co., Chicago, Ill.
Roll-a-Bend—Pipe benders. Radiant Devices, St. Louis, Mo.
Roll-Bond—Heat exchangers. Olin Mathieson Chemical Corp., Metals Div., New York, N. Y.
Roll Matric—Electrodes. All-State Welding Alloys Co., Inc., White Plains, N. Y.
Roll-O-Matic—Filters. American Air Filter Co., Inc., Louisville, Ky.
Rollotron—Air filters. American Air Filter Co., Inc., Louisville, Ky.
Rolo-Bend—Tubing benders. Wilson Mfg. Co., Memphis, Tenn.
Rolo-Flair—Tools. Wilson Mfg. Co., Memphis, Tenn.
Roomaire—Air conditioning units. Young Radiator Co., Racine, Wis.
Roommate—Air conditioning units. Nesbitt, Inc., John J., Philadelphia, Pa.
Rotameter—Flow meters. Schutte and Koerting Co., Cornwells Heights, Bucks County, Pa.
Rotary Union—Pipe joints. Perfecting Service Co., Charlotte, N. C.
Rotary Valvent—Ventilators. Swartwout Co., The, Cleveland, O.
Roto-Clone—Dust collectors. American Air Filter Co., Inc., Louisville, Ky.
Roto-Cup—Gas and oil burners. Best Combustion Equipment Co., Inc., W. N., Carlstadt, N. J.
Rotocure—Belting. Boston Woven Hose & Rubber Co., Div. of American Biltrite Rubber Co., Cambridge, Mass.
Rotodip—Chemical feeders. Omega Div., B-I-F Industries, Inc., Providence, R. I.
Rotograte Stoker—Stokers. Detroit Stoker Co., Monroe, Mich.
Rotojet—Spray nozzles. Binks Mfg. Co., Chicago, Ill.
Roto-louvre—Dryers. Link-Belt Co., Chicago.
Rotomet—Solder and fluxes. Rotometals, San Francisco, Calif.
Rotometric—Solder and fluxes. Rotometals, San Francisco, Calif.
Roto-Mold—Packing. Linear Inc., Philadelphia, Pa.
Rotonetic—Gas burners. Webster Engineering Co., Tulsa, Okla.
RotoStoker—Stokers. Detroit Stoker Co., Monroe, Mich.
RotoStoker—Type C-C—Stokers. Detroit Stoker Co., Monroe, Mich.
Roto-Torq—Tools. Richmont, Inc., Monrovia, Calif.
Roto-trol—Liquid pressure regulators, alarms, indicators, and switches. Healy Ruff Co., St. Paul, Minn.
Roto-Vent—Ventilators. Hudson Mfg. Co., H. D., Chicago, Ill.
Roto-Wash—Booths. Griffin & Co., Louisville, Ky.
Rotrkore—Masonry drills. Star Expansion Industries, Mountainville, N. Y.
Rotrtwist—Drills. Star Expansion Industries Corp., Mountainville, N. Y.
Round Wound—Transformers. Line Material Industries, McGraw-Edison Co., Milwaukee, Wis.
Roust-A-Bout—Pipe repair clamps. Victaulic Co. of America, Elizabeth, N. J.
Roxaprene—Protective coatings, enamels and lacquers. Interchemical Corp., Finishes Div., Newark, N. J.
Royal—Gas fired heaters. Bastian-Morley Co., Inc., LaPorte, Ind.
Royal Clipper—Cutters and shears. M-M-A, Inc., Lancaster, Pa.
Royal, The—Ventilators. Penn Ventilator Co., Philadelphia, Pa.
Rubalt—Enamels and lacquers, protective coatings, high temperature paint. Hague & Co., Inc., Alfred, Div. of Lacquer & Chemical Corp., Brooklyn, N. Y.
Rubbon—Solder. All-State Welding Alloys Co., Inc., White Plains, N. Y.
Rub-R-Lon—Enamels and lacquers. Acorn Refining Co., Cleveland, O.
Rubyfluid—Solder. Ruby Chemical Co., Columbus, O.
Rumaco—Pump-motor units. Ruthman Machinery Co., Cincinnati, O.
Rusco—Window panels, canopies. Russell Co., F. C., The, Cleveland, O.
Rusco Prime—Windows. Russell Co., F. C., The, Cleveland, O.
Rust Bloc No. 20—Coatings. Turco Products, Inc., Los Angeles, Calif.
Rustbuster—Cleaning compounds, water treatment. Cannon Chemical Co., Inc., Cambridge, Mass.
Rust Eradicator—Water treatment. North American Mogul Products Co., The, Cleveland, O.
Rust Evade—Coatings. Turco Products, Inc., Los Angeles, Calif.
Rust Raider—Compounds. Radiator Specialty Co., Charlotte, N. C.
Rustrem—Protective coatings. Speco, Inc., Cleveland, O.
Rust Remover—Compounds. Turco Products, Inc., Los Angeles, Calif.
Rust Veto—Protective Coatings. E. F. Houghton & Co., Philadelphia, Pa.

S-A—Conveyors, feeders. Sealmaster Bearings, Div. of Stephens-Adamson Mfg. Co., Aurora, Ill.
SA—Valves. Lunkenheimer Co., Cincinnati, O.
SC—Bearings. Dodge Mfg. Corp., Mishawaka, Ind.
SCM—Bearings. Dodge Mfg. Corp., Mishawaka, Ind.
S.F.E.—Insulation. Standard Fuel Engineering Co., Detroit, Mich.
SF—Integral Fan Base—Vibration bases. Vibration Mountings, Inc.; Corona, N. Y.
SHB Hanger—Absorbers, hangers. Vibration Mountings, Inc., Corona, N. Y.
S I—Analyzers, indicators, recorders and systems. Standard Instrument Div., Heat-Timer Corp., New York, N. Y.
SL—Bearings. Dodge Mfg. Corp., Mishawaka, Ind.
S & P—Burners, governors, preheaters, strainers, fuel oil units, valves. Staples & Pfeiffer, San Francisco, Calif.
S. R. P. 75—Protective coatings. Sonneborn Sons, Inc., L., Building Products Div., New York, N. Y.
SRP 87—Protective coatings, paint. Sonneborn Sons, Inc., L., Building Products Div., New York, N. Y.
SSS—Belting. Goodall Rubber Co., Trenton, N. J.
Sabanol—Fuel oil treatment. American Sand-Banum Co., Inc., Merrick, N. Y.
Sabrex—Protective coatings. Navan Products, Inc., Los Angeles, Calif.
Saco—Speed reducers. Sealmaster Bearings, Div. of Stephens-Adamson Mfg. Co., Aurora, Ill.
Safe-Flo—Heaters. Screw Machine Products Co., Portland, Ore.
Safe Guard—Fuel oil preheaters. Alstrom Corp., New York, N. Y.
Safe-T-Aire—Air sterilizing units, and lamps. Hanovia Lamp Div., Engelhard Industries, Inc., Newark, N. J.
Safe-T-Clad—Industrial adhesive tape. Dearborn Chemical Co., Chicago, Ill.
Safe-T-Submersion—Boilers, burners, heaters, systems. Stout & Sons, David, St. Louis, Mo.
Safety Pull—Hoists. Coffing Hoist Div., Duff-Norton Co., Danville, Ill.
Safeway Load-Lift—Trucks. American Pulley Co., The, Philadelphia, Pa.
Saf-T-Edge—Pipe hangers and supports. Western Wire Products Co., St. Louis, Mo.
Saint Louis—Stokers. Ormsby-Osterman, Inc., St. Louis, Mo.
Sairset—Cement, refractories and refractory cement. Green Fire Brick Co., A. P., Mexico, Mo.
Sal Brick—Solder and fluxes. American Solder & Flux Co., Philadelphia, Pa.
Samco—Incinerators. Syrall Mfg. Co., Syracuse, N. Y.
Sanitile—Enamels and lacquers. Master Mechanics Co., Cleveland, O.
Sanitizer—Treatment. Oakite Products, Inc., New York, N. Y.
Santobrite—Water treatment. Monsanto Chemical Co., St. Louis, Mo.
Santocel—Insulation. Monsanto Chemical Co., St. Louis, Mo.
Santolene—Fuel oil treatment. Monsanto Chemical Co., St. Louis, Mo.
Santosite—Water treatment. Monsanto Chemical Co., St. Louis, Mo.
Saraloy—Gaskets, packing. Saran Lined Pipe Co., Ferndale, Mich.
Sarancote—Protective coatings. Saran Lined Pipe Co., Ferndale, Mich.
Sarine—Treatment. Berna Corp., Garwood, N. J.
Sarine-Amid—Treatment. Berna Corp., Garwood, N. J.
Satanite—Refractories & refractory cement. Green Fire Brick Co., A. P., Mexico, Mo.
Saunders—Cutters. Armstrong Bros. Tool Co., Chicago, Ill.
Saunders—Pipe cutters. Erie Tool Works, Erie, Pa.
Saunders—Diaphragm valves. Grinnell Co., Inc., Providence, R. I.
Saunders-Barnes—Pipe cutters. American Pipe Tool Co., Chicago, Ill.
Saunders Patent—Valves. Hills-McCanna Co., Chicago, Ill.
Sav-A-Tank—Fuel oil treatment. Sudbury Laboratory, South Sudbury, Mass.
Sawzall—Tools. Milwaukee Electric Tool Corp., Milwaukee, Wis.
Scav-Ox—Water treatment. Olin Mathieson Chemical Corp., Chemicals Div., Baltimore, Md.
Scentinel—Compounds. Ampion Corp., Long Island City, N. Y.
Schmidt—Torches. Minn-Kota Foundry & Mfg. Co., Moorhead, Minn.
Schwan—Gas burners. Jamieson Mfg. Co., Dallas, Texas.
Scoop-Rail—Scoops, vanes. Cain Mfg. Co., Birmingham, Ala.
Scotch—Adhesive tape. Minnesota Mining & Mfg. Co., St. Paul, Minn.
Scotch-Mund—Boilers. Western Boiler Co., Los Angeles, Calif.
Scotchrap—Adhesives, underground pipe insulation, adhesive tape, pipe wrap. Minnesota Mining & Mfg. Co., St. Paul, Minn.
Scout—Water heaters. Bastian-Morley Co., Inc., LaPorte, Ind.
Screw King—Reducers and increasers. American Pulley Co., The, Philadelphia, Pa.
Screw-Seal—Pipe. Robinson Clay Product Co., Inc., The, Akron, O.
Scroll-Aire—Air heaters. Newcomb-Detroit Co., Detroit, Mich.
Scrugun—Tools. Black & Decker Mfg. Co., The, Towson, Md.
Scruin—Bolts. Star Expansion Industries Corp., Mountainville, N. Y.
Scru-Lokt—Pipe couplings, hose to pipe fittings. Band-It Co., Denver, Colo.
Scru-peller—Sewage ejectors and pumps. Chicago Pump Co., Subsidiary of Food Machinery & Chemical Corp., Chicago, Ill.
Sea Lion—Leather belting. Chicago Belting Div., Chicago-Allis Mfg. Corp., Chicago, Ill.
Sea Rings—Asbestos packing. Johns-Manville, New York, N. Y.
Sealastic—Fittings, leak detectors, leak testers. Chicago Forging and Mfg. Co., Chicago, Ill.
Sealeak—Compounds. Ampion Corp., Long Island City, N. Y.
Sealed Life—V-Belts. Dodge Mfg. Corp., Mishawaka, Ind.
Sealfas—Adhesives, vapor barriers. Foster Co., Benjamin, Philadelphia, Pa.
Sealmore—Cement and compounds. Armite Laboratories, Los Angeles, Calif.
Sealon—Tank linings. Knight, Maurice A., Akron, O.
Seal-Rite—Cement and compounds. Macksons Co., New York, N. Y.
Seal Saver—Packing. Greene, Tweed & Co., North Wales, Pa.
Seal Tight—Frames for holding panel type air filters. George Evans Corp., Moline, Ill.
Seal-Tite—Ducts and duct fittings, pipe and fittings. Williamson Co., The, Cincinnati, O.
Seasonmaker—Air conditioning units. McQuay, Inc., Minneapolis, Minn.
Seasonmaster—Air conditioning units. McQuay, Inc., Minneapolis, Minn.
See-All—Sight glasses for pipe lines. Sporlan Valve Co., St. Louis, Mo.
Seigelite—Gaskets. Johns-Manville, New York.
Seilon—Plastic sheets. Seiberling Rubber Co., Newcomerstown, O.
Selectair—Air conditioning units. Johnson Co., S. T., Oakland, Calif.
Select-A-Spede—Speed changers. Allis Co., Louis, The, Milwaukee, Wis.
Selectric—Heaters. Bastian-Morley Co., Inc., LaPorte, Ind.
Selectrol—Regulators. Automatic Control Co., St. Paul, Minn.
Selectron—Plastics, powders and resins. Pittsburgh Plate Glass Co., Pittsburgh, Pa.
Selflube—Sleeve bearings. Keystone Carbon Co., Inc., St. Marys, Pa.
Sel-Lok—Parts for heating and air conditioning equipment. Standard Pressed Steel Co., Jenkintown, Pa.
Sells—Bearings. Royersford Foundry & Machine Co., Royersford, Pa.
Sensatherm—Thermostats. Mercoid Corp., The, Chicago, Ill.
Sensitrol—Relays. Weston Instruments, Div. of Daystrom, Inc., Newark, N. J.
Sentinel—Valves. McRae Specialty Co., Don, Glendale, Calif.
Sentry—Alarms, smoke indicators, smoke recorders. Edwards, L. V., Rockville Center, N.Y.
Sentry—Valves. Coppus Engineering Corp., Worcester, Mass.
Sep-return—Separators. Wabash Corp., Chicago, Ill.
Serval—Gaskets. Chicago Gasket Co., Chicago, Ill.
Service—Packing. Johns-Manville, New York.
Servicecoat—Enamels and lacquers. Debevoise Co., The, Brooklyn, N. Y.
Sesure—Gages, Yarnall-Waring Co., Philadelphia, Pa.
Sever-All—Tools. Allison-Campbell Div. of American Chain & Cable Co., Inc., Bridgeport, Conn.
Severn Oil—Boilers. American Radiator & Standard Sanitary Corp., Plumbing & Heating Div., New York, N. Y.
Shafconaire—Unit heaters, fans. OverHead Heaters, Inc., Detroit, Mich.
Shafer—Bearings. Chain Belt Co., Milwaukee, Wis.
Shaftex—Drives. Allis-Chalmers Mfg. Co., Milwaukee, Wis.

Shaft King—Reducers, drives. American Pulley Co., The, Philadelphia, Pa.
SHALCO—Aluminum sheets. Mueller Brass Co., Port Huron, Mich.
Shawco—Bends, headers. Shaw Co., Benjamin F., Wilmington, Del.
Shear-Flex—Bases and pads, noise elimination for cooling towers. Vibration Mountings, Inc., Corona, N. Y.
Shear-Seal—Valves. Barksdale Valves, Los Angeles, Calif.
Shelby—Tubing. National Tube Div., United States Steel Corp., Pittsburgh, Pa.
Shield-Arc—Electrodes, arc welders. Lincoln Electric Co., Cleveland, O.
Ship-Heaters—Boilers. Way-Wolff Associates, Inc., Long Island City, N. Y.
Shockmounts—Bases and pads. Lord Mfg. Co., Erie, Pa.
SHOKSTOP—Absorbers. Wade Mfg. Co., Elgin, Ill.
Shoktrol—Adsorbers. Zurn Industries, Inc., Erie, Pa.
Shone—Sewage ejectors. Yeomans Bros. Co., Melrose Park, Ill.
Shop King—Welders. Precision Welder Mfg. Co., Chicago, Ill.
Shopmate—Drills. Portable Electric Tools, Inc., Chicago, Ill.
Shuntflo—Meters. Builders-Providence Div., B-I-F Industries Inc., Providence, R. I.
Shure-Set—Tools. Ramset Fastening System, Winchester-Western Div., Olin Mathieson Chemical Corp., Cleveland, O.
Shur-Flo—Switches. Hays Mfg. Co., Erie, Pa.
Shur-Flo—Fans. Walker Mfg. & Sales Co., St. Joseph, Mo.
Shur-Grip—Tools. Duro-Dyne Corp., New Hyde Park, Long Island, N. Y.
Shuttle Break—Switches. Adam Electric Co., Frank, St. Louis, Mo.
Shut-O-Vent—Louvers and shutters. Reed Unit-Fans, Inc., New Orleans, La.
Sigma—Air diffusers, perforated panels. Wakefield Co., The, Vermilion, O.
Silastic—Packing. Dow Corning Corp., Midland, Mich.
Sil Bond—Solder. United Wire & Supply Corp., Cranston, R. I.
Silence Service—Noise elimination. Industrial Sound Control Dept. of Koppers Co., Inc., Metal Products Div., Baltimore, Md.
Silensair—Duct insulation, noise elimination for cooling towers. Sound Reduction Corp., East Hartford, Conn.
Silent-Aire—Fans, propeller. Swift Mfg. Co. Inc., Royal Oak, Mich.
Silent-Auburn—Burners, heaters, air conditioning units. Auburn Burner Co., Auburn, Ind.
Silent-Breeze—Fans, louvers and shutters, window and ventilator units. Meier Electric & Machine Co., Inc., Indianapolis, Ind.
Silent Chain—Drives. Link-Belt Co., Chicago, Ill.
Silent Duct—Connections. Elgen Mfg. Corp., Long Island City, N. Y.
Silent Knight—Valves. White-Rodgers Co., St. Louis, Mo.
Silentride—V belts. Zatko Metal Products Co., Euclid, O.
Silentube—Duct insulation, noise elimination for cooling towers. Sound Reduction Corp., East Hartford, Conn.
Silent Vent—Ventilators. Detroit Blower Corp., Franklin Park, Ill.
Sil Flux—Solder. United Wire & Supply Corp., Cranston, R. I.
Sil-Fos—Solder. Handy & Harman, New York, N. Y.
Silica Gel—Refrigerant dehydrators. Eagle Chemical Co., Inc., Chicago, Ill.
Silicon-Alkyd—Protective coatings. Watson-Standard Co., Pittsburgh, Pa.
Silicone—Protective coatings. Dow Corning Corp., Midland, Mich.
Silimite—Water treatment. Allis-Chalmers Mfg. Co., Milwaukee, Wis.
Sillimanite—Refractories and refractory cement. Taylor Sons Co., Charles, Cincinnati.
Sill-Line—Radiation. Nesbitt, Inc., John J., Philadelphia, Pa.
Siloo—Solvents, fuel oil treatment. Petroleum Solvents Corp., New York, N. Y.
Siltube—Solder. All-State Welding Alloys Co., Inc., White Plains, N. Y.
Silver-brite Roller Chain—Drives. Link-Belt Co., Chicago, Ill.
Silver Comet—Coatings. Southport Paint Co., Div. Wesson Oil & Snowdrift Co., Inc., Savannah, Ga.
Silver Star—Torches, welding and cutting apparatus. Smith Welding Equipment Corp., Minneapolis, Minn.
Silver Steel—Tools. Atkins Saw Div., Borg-Warner Corp., Indianapolis, Ind.
Silverstreak—Drives. Link-Belt Co., Chicago, Ill.
Silver Streak—Blower wheels. Viking Air Products Div., National-U. S. Radiator Corp., Cleveland, O.
Silver Stream—Spray nozzles. Skinner Irrigation Co., Troy, O.
Silvertop—Eliminators, traps. Anderson Co., V. D., The, Div. of International Basic Economy Corp., Cleveland, O.
Silver-Weld—Solder. Eutectic Welding Alloys Corp., Flushing, N. Y.
SilWeld—Solder. Eutectic Welding Alloys Corp., Flushing, N. Y.
Simplex—Gages. Viking Pump Co., Cedar Falls, Ia.
Simplex—Regulators. Bell & Gossett Co., Morton Grove, Ill.
Simplex—Wrenches. Lowell Wrench Co., Worcester, Mass.
Sim-ply-trol—Indicator-controllers, regulators. Assembly Products, Inc., Chesterland, O.
Simsestos—Packing. Sims Pump Valve Co., Hoboken, N. J.
Simsite—Packing. Sims Pump Valve Co., Hoboken, N. J.
Sim-Trol—Controls, combustion regulators. Simplex Mfg. Co., Fond du Lac, Wis.
Sine Switch—Switches. Spencer Thermostat Div., Metals & Controls Corp., Attleboro, Mass.
Single-Flow—Cooling towers. Marley Co., The, Kansas City, Mo.
Sioux—Electric drills, grinders and grinding wheels, saws, shafts. Albertson & Co., Inc., Sioux City, Ia.
Siphon—Ventilators. Octagon Ventilator Co., Chicago, Ill.
Sirocco—Blowers, fans. American Blower Div. of American-Standard, Detroit, Mich.
Skimmer—Dust collectors. American Air Filter Co., Inc., Louisville, Ky.
Skip-Tooth—Dies. Nye Tool Co., Chicago, Ill.
Sky-Blast—Roof fan ventilators. Propellair Div., Robbins & Myers Inc., Springfield, O.
Skyline—Ventilators. Arex Co., Chicago, Ill.
Skymaster—Ventilators. Acme Engineering & Mfg. Corp., Muskogee, Okla.
Sleevoil—Bearings. Dodge Mfg. Corp., Mishawaka, Ind.
Slenderizer—Direct radiation. Burnham Corp., Irvington, N. Y.
Slim-Line—Baseboard radiation. Slant-Fin Radiator Corp., Richmond Hill, N. Y.
Slip-On—Pipe insulation. Taft-Jenkins Co., Inc., Holyoke, Mass.
Sludge Solvent No. 32—Fuel oil treatment. Montgomery Chemical Co., Jenkintown, Pa.
Sludgit—Fuel oil treatment. Anderson Chemical Co., Inc., Macon, Ga.
Sludgout—Fuel oil treatment. Metropolitan Refining Co., Inc., Long Island City, N. Y.
Slugin—Bolts. Star Expansion Industries Corp., Mountainville, N. Y.
Smith-Clamp—Pipe repair clamps. Pipe Line Development Co., Cleveland, O.
Smith-Dolan—Electric preheaters and stress relievers. Electric Arc, Inc., Newark, N. J.
Smog-Free—Odor absorbers. Radex Corp., Chicago, Ill.
Smoke-Trip—Ventilators. Propellair Div., Robbins & Myers, Inc., Springfield, O.
Smokey—Guns for testing air movement. Design Engineers, Rockford, Ill.
Snapin—Bolts. Star Expansion Industries Corp., Mountainville, N. Y.
Snaplok—Gas vent and flue pipe and fittings. Reeves Steel & Mfg. Co., Div. of Empire-Reeves Steel Corp., Dover, O.
Sno-Breeze—Air Conditioning units. Palmer Mfg. Corp., Phoenix, Ariz.
Snip-It—Air filters. C.L.B. Co., Houston, Tex.
Snug—Radiation. Weil-McLain Co., Michigan City, Ind.
Sockolets—Fittings. Bonney Forge & Tool Wks., Allentown, Pa.
Sod-R-Braze—Torches. National Cylinder Gas Div. of Chemetron Corp., Chicago, Ill.
Sof Tite—Sheets. Wheeling Corrugating Co., Wheeling, W. Va.
Sof Tite—Sheets. Wheeling Steel Corp., Wheeling, W. Va.
Softweld—Electrodes. Lincoln Electric Co., Cleveland, O.
Sola-Flex—Pipe joints. Solar Aircraft Co., San Diego, Calif.
Solar Flame—Burners. National-U.S. Radiator Corp., Johnstown, Pa.
Solar Screens—Sun reflecting screens. Federal Seaboard Terra Cotta Corp., New York, N. Y.
Solray—Radiation. Weil-McLain Co., Michigan City, Ind.
Sol-vet—Cleaning compounds, water treatment. Anderson-Stolz Corp., Kansas City, Mo.
Solvex—Cleaning compounds. Chemical Solvent Co., Birmingham, Ala.
Solvo-Rust—Solvent. Permatex Co., Inc., Long Island, N. Y.
Sonderglass—Glasses. Chesterton Co., A. W., Everett, Mass.
Sonic-Ray—Heaters. Bica Co., Girard, O.
Sonoairduct—Ducts. Sonoco Products Co., Construction Products Div., Hartsville, S. C.
Son-No-Mar—Enamels and lacquers. Sonneborn Sons, Inc., L., Building Products Div., New York, N. Y.
Sonobond—Solder. Aeroprojects, Inc., West Chester, Pa.
Sonotard—Concrete densifiers. Sonneborn Sons, Inc., L., Building Products Div., New York, N. Y.
So-Soft—Softeners. Stover Water Softener Co., St. Charles, Ill.
So-Soft Amatic—Water softeners. Stover Water Softener Co., St. Charles, Ill.
Soundliner—Insulation. Baldwin-Hill Co., Trenton, N. J.
Sound Metal—Noise elimination. Industrial Sound Control Dept. of Koppers Co., Inc., Metal Products Div., Baltimore, Md.
Soundscope—Testers. Marsh Instruments Co., Skokie, Ill.
Soundscope—Indicators. Mine Safety Appliances Co., Pittsburgh, Pa.
Sound Stream—Absorbers. Industrial Sound Control Dept. of Koppers Co., Inc., Metal Products Div., Baltimore, Md.
Sound-Zorbers—Vibration absorbers. Finn & Co., Inc., T. R., Hawthorne, N. J.
Sovereign—Packing. Darcoid Co., Inc., New York, N. Y.
Space Saver—Heaters. Payne Company, La Puente, Calif.
Sparktrodes—Electrodes. Dielectric Products Co., Inc., Jersey City, N. J.
Spartan—Packing, belting. Graton & Knight Co., Worcester, Mass.
Spasaver—Cooler units, Drayer-Hanson, Div. of National-U.S. Radiator Corp., Los Angeles, Calif.
Spearhead—Gasket cutters. Zimmerman Packing, Cincinnati, O.
Special X—Solder. Chemical Specialty Div., Shooz Polish Mfg. Co., Milwaukee, Wis.
Spe-D-Flar—Tools. Engesser & Co., William L., El Monte, Calif.
Speedaire—Reducers. Cleveland Worm & Gear Co., Cleveland, O.
Speedaire—Compressors. Dayton Electric Mfg. Co., Chicago, Ill.
Speed Drills—Drills. Speedway Mfg. Co., Div. of Thor Power Tool Co., Chicago, Ill.
Speed Grinders—Grinders. Speedway Mfg. Co., Div. of Thor Power Tool Co., Chicago.
Speedomax—Indicator and recorder-controllers, recorders, thermometers. Leeds & Northrup Co., Philadelphia, Pa.
Speed Primer—Pumps. Chain Belt Co., Milwaukee, Wis.
Speed-Rex—Protective coatings. Truscon Laboratories Div., Devoe & Raynolds Co., Inc., Detroit, Mich.
Speed-Thru—Pipe pushers, stocks and dies. Mercury Hydraulics, Inc., Denver, Colo.
Speed-Trol—Changers. Sterling Electric Motors, Inc., Los Angeles, Calif.
Speed Variator—Changers. Cleveland Worm and Gear Co., Cleveland, O.
Speedy—Clamps, cutters, packing, plugs, tools, wrenches. Chicago Specialty Mfg. Co., Chicago, Ill.
Speedy-Cal—Nameplates. North Shore Nameplate Inc., Bayside, N. Y.
Speedylectric—Boilers, generators, superheaters. Pantex Mfg. Corp., Pawtucket, R. I.
Speedy-Marx—Identification markers. North Shore Nameplate Inc., Bayside, N. Y.
Spekaluminite—Coatings. Special Chemicals Corp., Ossining, N. Y.
Spekleen—Compounds. Special Chemicals Corp., Ossining, N. Y.
Sphero—Ball type and Blow-off valves. Fairbanks Co., New York, N. Y.
Spinner—Gravity ventilators. Warner Ventilator Co., LaGrange, Ind.
Spinner—Ventilators. Inland Steel Products Co., Milwaukee, Wis.
Spin-seat—Steam trap floats. Reichert Float & Mfg. Co., Toledo, O.
Spintex—Building and duct insulation. Johns-Manville, New York, N. Y.
Spiral Lockseam—Spiral welded ducts. United Sheet Metal Co., Inc., Columbus, O.
Spiralweld—Nickel plated pipe. Taylor Forge & Pipe Wks., Chicago, Ill.
Spiratube—Ducts and duct fittings, hose, tubing. Flexible Tubing Corp., Guilford, Conn.
Spiraweld—Pipes. Naylor Pipe Co., Chicago.
Spiro—Heaters. Stout & Sons, David, St. Louis, Mo.
Spirodome—Spray nozzles. Fluor Products Co., Whittier, Calif.
Spi-Rol-Fin—Radiation. Edwards Engineering Corp., Pompton Plains, N. J.
Spirotallic—Gaskets. Johns-Manville, New York, N. Y.
Spirovane—Fans. Western Blower Co., Seattle, Wash.
Sponge-Dortite—Tape for sealing joints. Durkee-Atwood Co., Minneapolis, Minn.
Spongex—Bases and pads, gaskets, pipe insulation. B. F. Goodrich Co., Shelton, Conn.
Spotaire—Air conditioning units, heaters. Drayer-Hanson, Div. of National-U.S. Radiator Corp., Los Angeles, Calif.
Spra-Chiller—Water chillers. Watkins Co., J. E., Maywood, Ill.
Spraco—Booths, nozzles aftercoolers, humidifiers, regulators, systems, separators, strainers, washers. Spray Engineering Co., Burlington, Mass.
Spra-Rite—Nozzles. Binks Mfg. Co., Chicago.
SpraTower—Cooling Towers. Marley Co., The, Kansas City, Mo.
Spray-Acoustic—Insulation. Sprayo Flake Co., Chicago, Ill.

Spray-It—Air compressors, viscosimeters. Thomas Industries, Inc., Electric Sprayit Div., Sheboygan, Wis.
Spray-Mastic—Protective coatings. Eagle-Picher Co., Cincinnati, O.
Spray Stops—Protective covers. Neirad Industries, Inc., Darien, Conn.
Spraywheel—Air washers. Mountain States Equipment Co., Denver, Colo.
Spring-Flex—Absorbers, bases and pads, hangers, noise elimination for cooling tower. Vibration Mountings, Inc., Corona, N. Y.
Springin—Bolts. Star Expansion Industries Corp., Mountainville, N. Y.
Spunaire—Ventilators. Swartwout Co., The, Cleveland, O.
Spun steel—Pulleys, sheaves. Mercury Clutch Div., Automatic Steel Products, Inc., Canton, O.
Square-Fin—Radiation. Slant-Fin Radiator Corp., Richmond Hill, N. Y.
Stabiflo—Valves. Foxboro Co., Foxboro, Mass.
Stainlend—Electrodes. Arcos Corp., Philadelphia, Pa.
StainRod—Rods. Eutectic Welding Alloys Corp., Flushing, N. Y.
StainTin—Solder. Eutectic Welding Alloys Corp., Flushing, N. Y.
StainTrode—Electrodes. Eutectic Welding Alloys Corp., Flushing, N. Y.
Stainweld—Electrodes. Lincoln Electric Co., Cleveland, O.
Stalostic—Protective coatings. Eagle-Picher Co., Cincinnati, O.
Standard—Vacuum cleaners, dust collectors. Empire Chemical Products Co., Newark, N. J.
Standard—Ventilators. Burt Mfg. Co., Akron, O.
Standard Thrift—Pipe hangers and supports. Western Wire Products Co., St. Louis, Mo.
Standforated—Grilles. Standard Stamping & Perforating Co., Chicago, Ill.
Star-O-Zone—Ozone apparatus. Norwood Associated Engineers Inc., Springfield, Mass.
Statick—Ventilators. Hirschman-Pohle Co., Inc., Le Roy, N. Y.
Stat-O-Seal—Seals. Parker Seal Co., Culver City, Calif.
Staxauster—Roof ventilators. Allen Cooler & Ventilator, Inc., Rochester, Mich.
Staynew—Filters, silencers. Dollinger Corp., Rochester, N. Y.
Stazin—Bolts. Star Expansion Industries Corp., Mountainville, N. Y.
Stazon—Caulking & Cleaning compounds. Plastic Products Co., Detroit, Mich.
Steam-Pak—Boilers. York-Shipley, Inc., York, Pa.
Steam-Pakette—Boilers. York-Shipley, Inc., York, Pa.
Steelarc—Electrodes, arc welding. All-State Welding Alloys Co., Inc., White Plains, N. Y.
Steelbestos—Metal sheets. American Steel Band Co., Pittsburgh, Pa.
Steelfin—Surface. New York Blower Co., Chicago. Ill.
Steelflex—Couplings. Falk Corp., Milwaukee.
Steel-Pak—Radiation. Slant-Fin Radiator Corp., Richmond Hill, N. Y.
SteelTectic—Electrodes. Eutectic Welding Alloys Corp., Flushing, N. Y.
Steelweld—Brakes, power shears. Cleveland Crane & Eng. Co., Wickliffe, O.
Stemco—Thermostats. Stevens Mfg. Co., Inc., Mansfield, O.
Sterilamp—Lamps. Westinghouse Electric Corp., Lamp Div., Bloomfield, N. J.
Steritron—Water treatment, water sterilizing units. Hanovia Lamp Div., Engelhard Industries, Inc., Newark, N. J.
Sterlco—Pumps, strainers, regulators, traps, valves. Sterling, Inc., Milwaukee.
Sterling-Magic—Non-metal hose. New York Belting & Packing Co., Passaic, N. J.
Stic-Tite—Cement, insulation. Refractory & Insulation Corp., New York, N. Y.
Stillson Heavy Duty Walco—Wrenches. Walworth Co., New York, N. Y.
Stirling—Boilers. Babcock & Wilcox Co., Boiler Div., New York, N. Y.
Stok-A-Fire—Stokers. Automatic Corp., St. Louis, Mo.
Stokerlay—Relays. Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.
Stonewall—Board and sheets. Ruberoid Co., New York, N. Y.
Storm Shade—Windows. Ingersoll Products Div., Borg-Warner Corp., Chicago, Ill.
Straitflo—Strainers. Hays Mfg. Co., Erie, Pa.
Strand—Grinders and grinding wheels. Franklin Balmar Corp., Baltimore, Md.
Strato-Flair—Tools. Wilson Mfg. Co., Memphis, Tenn.
Streamjet—Spray nozzles. Spraying Systems Co., Bellwood, Ill.
Streamline—Couplings, coils, filters, dehydrators, glasses, hose, plugs, purgers, solder, parts for heating and air conditioning equipment, cutters, fittings, hangers, heat exchangers, manifolds, nipples, pipe, strainers, tubing, unions, valves. Mueller Brass Co., Port Huron, Mich.
Streamlined—Chambers. Green Fire Brick Co., A. P., Mexico, Mo.
Streamliner—Registers. Auer Register Co., Cleveland, O.
Streamliner—Belting. New York Belting & Packing Co., Passaic, N. J.
Strickler—Pipe cutting and threading machines. Wachs Co., E. H., The, Chicago, Ill.
Strongbarn—Steel sheets. Granite City Steel Co., Granite City, Ill.
Stronghold—Belting. Rhoads & Sons, J. E., Wilmington, Del.
Stubby—Vacuum cleaners, dust collectors. Empire Chemical Products Co., Newark, N. J.
Stud-Pins—Bolts, toggle and anchor. Fastway Fasteners, Inc., Lorain, O.
Styrene-Copolymer—Plastic pipe. Vanton Pump & Equipment Corp., Hillside, N. J.
Styrofoam—Insulation. Dow Chemical Co., The, Midland, Mich.
Styropol—Adhesives. Adhesive Products Corp., New York, N. Y.
Submatic—Electric motors. Franklin Electric Co., Inc., Bluffton, Ind.
Suburban—Radiation. Slant-Fin Radiator Corp., Richmond Hill, N. Y.
Sudden Depth—Drill. Paine Co., Addison, Ill.
Sullivan—Controls. Cole-Sewell Engineering Co., St. Paul, Minn.
Summeraire—Heaters. Clayton Mfg. Co., El Monte, Calif.
Sunair—Heaters. Mission Appliance Corp., Hawthorne, Calif.
Sun-Dial—Radiators. Slant-Fin Radiator Corp., Richmond Hill, N. Y.
Sunicut—Oil. Sun Oil Co., Philadelphia, Pa.
Suniso—Refrigeration oil. Sun Oil Co., Philadelphia, Pa.
Sun-Lite-Aire—Sterilizing lamps and units. Sampson Scientific Co., Div. of the Sampson Chemical & Pigment Corp., Chicago, Ill.
Sunnyaire—Heaters. Crane Co., Chicago, Ill.
Sunnybase—Radiation. Crane Co., Chicago Ill.
Sunnyday—Boilers. Crane Co., Chicago, Ill.
Sunnywall—Radiation. Crane Co., Chicago, Ill.
Sunrad—Direct radiation. American Radiator & Standard Sanitary Corp., Plumbing & Heating Div., New York, N. Y.
Sunray—Radiation. National-U.S. Radiator Corp., Johnstown, Pa.
Super—Transformers. Union Electric & Mfg. Co., Jersey City, N. J.
Super—Vacuum cleaners, dust collectors. Empire Chemical Products Co., Newark, N. J.
Super Air-Van—Wall ventilators. Gallaher Co., The, Omaha, Nebr.
Superbo—Insulation. Carey Mfg. Co., Philip, Cincinnati, O.
Supercutno—Packing. Greene, Tweed & Co., North Wales, Pa.
Super-Diamond—Floor and ceiling plates. Eastern Stainless Steel Corp., Baltimore, Md.
Super Dry-Eye—Refrigerant dehydrators, sight glasses for pipe lines. Ansul Chemical Co., Refrigeration Div., Marinette, Wis.
Super Dylan—Plastics, powders and resins. Koppers Co., Inc., Pittsburgh, Pa.
Superector—Wrenches. Williams & Co., J. H., Buffalo, N. Y.
Superex—Pipe, boiler and tank insulation. Johns-Manville, New York, N. Y.
Super Filter Coat—Adsorbers. Research Products Corp., Madison, Wis.
Superfin—Furnaces, heaters. American Foundry & Furnace Co., Bloomington, Ill.
Super-Fine—Insulation. L.O.F. Glass Fibers Co., Toledo, O.
Super Finish—Insulation. Refractory & Insulation Corp., New York, N. Y.
Super Finish Stic-Tite—Finishing cement insulation. Refractory & Insulation Corp., New York, N. Y.
Super-Flo—Dehydrators, filters. Remco, Inc., Zelienople, Pa.
Superflo—Heaters. Payne Company, La Puente, Calif.
Superflux—Solder. Paul-Lewis Laboratories, Inc. Milwaukee, Wis.
Superheat—Burners. Selas Corp. of America, Dresher, Pa.
Superholder—Tools. Nupla Mfg. Co., Los Angeles, Calif.
Superior—Fans. American Foundry & Furnace Co., Bloomington, Ill.
Superior—Gas fired heaters. Bastian-Morley Co., Inc., LaPorte, Ind.
Superior—Meters. Neptune Meter Co., New York, N. Y.
Super-Jet—Burners. Downing Steel Products, Dayton, O.
Super Light—Insulation. Philip Carey Mfg. Co., Lockland, Cincinnati, O.
Super Powerhouse—Insulating cement, insulation. Baldwin-Hill Co., Trenton, N. J.
Superratchet—Ratchet Wrenches. Williams & Co., J. H., Buffalo, N. Y.
Super-Saw—Tools, electric saws. RCS Tool Corp., Bloomington, Ill.
Super 7—V belts. Allis-Chalmers Mfg. Co., Milwaukee, Wis.
Super Silvertop—Traps. The V. D. Anderson Co., Div. of International Basic Economy Corp., Cleveland, O.
Super "66"—Insulation, cement insulating. Eagle-Picher Co., Cincinnati, O.
Super-Seal—Electric motors. Allis-Chalmers Mfg. Co., Milwaukee, Wis.
Super Seal—Valves. Farris Flexible Valve Corp., Palisades Park, N. J.
Supersheat—Gaskets, packing. Greene, Tweed & Co., North Wales, Pa.
Superspun—Cast iron pipe. Combustion Engineering Inc., New York, N. Y.
Supertemp—Insulation. Eagle-Picher Co., Cincinnati, O.
Supertherm—Heating systems. Ross Engineering Div., J. O., Midland-Ross Corp., New York, N. Y.
Super Venturi—Fittings. Taco Heaters, Inc., Cranston, R. I.
Super X—Coatings. Nelson Mfg. Co., B. F., Minneapolis, Minn.
Supplex—Pipe. American Hard Rubber Co., Div. of Amerace Corp., Butler, N. J.
Surefit—Ducts and duct fittings. Henry Furnace Co., Medina, O.
Surefit—Ducts and duct fittings. Olsen Mfg. Co., C. A., Elyria, O.
Sure Return—Condensation return pumps. Chicago Pump Co., Subsidiary of Food Machinery & Chemical Corp., Chicago, Ill.
Sureweld—Electrodes, welders. National Cylinder Gas Div. of Chemetron Corp., Chicago, Ill.
Surtamax—Pipe line filters. Micro Metallic Corp., Glen Cove, N. Y.
Sutco—Electric motors. Sutton Corp., O. A., The, Wichita, Kans.
Sweatflow—Valves. Quality Specialty Co., Inc., Camden, N. J.
Sweepolets—Pipe fittings. Bonney Forge & Tool Wks., Allentown, Pa.
Swif—Penetrant solvent. Hercules Chemical Co., Inc., New York, N. Y.
Swish—Cleaning compounds. Montgomery Chemical Co., Jenkintown, Pa.
Sylphon—Steam traps. Webster & Co., Warren, Camden, N. J.
Synchro-Flame—Burners. Synchronous Flame, Inc., Walworth, Wis.
Synchrogear—Changers. Zurn Industries, Inc., Erie, Pa.
Synchro-Lectric—Viscosimeters. Brookfield Engineering Laboratories, Inc., Stoughton, Mass.
Synchron—Motors. Hansen Mfg. Co., Inc., Princeton, Ind.
Synchro-Scan—Indicators. Builders-Providence Div., B-I-F Industries, Inc., Providence, R. I.
Synchro Valves—Operators, valves. The Bristol Co., Waterbury, Conn.
Syncretizer—Unit ventilators. Nesbitt, Inc., John J., Philadelphia, Pa.
Syncro—Gages, regulators, combustion control systems. Canton Stoker Corp., Canton, O.
Syncrogear—Drives, gear-motors, speed reducers. U. S. Electrical Motors, Inc., Los Angeles. Calif.
Syncro-Spede—Motors. Allis Co., Louis, Milwaukee, Wis.
Syndolag—Refractories and refractory cement. Basic Inc., Cleveland, O.
Syphonaire—Ventilators. Western Engineering & Mfg. Co., Venice, Calif.

T—Torches. Lincoln Electric Co., The, Cleveland, O.
TBTO—Water treatment. Metal & Thermit Corp., Rahway, N. J.
TMC—Dehydrators, refrigerant receivers. Tube Manifold Corp., North Tonawanda, N. Y.
T. T.—Smoke guns. Hill & Co., E. Vernon, Lake Geneva, Wis.
"TW"—Unit coolers. McQuay, Inc., Minneapolis, Minn.
TXT Valves—Valves. Texstream Corp., Houston, Tex.
Tabasco—Water heaters. Kewanee Boiler Div., American-Standard, Kewanee, Ill.
Tal-Bender—Benders. Hein-Werner Corp., Waukesha, Wis.
Tall Boy—Heaters. Lennox Industries, Inc., Marshalltown, Ia.
Tamax—Refractories and refractory cement. Taylor Sons Co., Charles, Cincinnati, O.
Tampin—Bolts. Star Expansion Industries Corp., Mountainville, N. Y.
Tamul—Refractories and refractory cement. Taylor Sons Co., Charles, Cincinnati, O.
Tanastic—Belting. Rhoads & Sons, J. E., Wilmington, Del.
Tanco—Insulation, duct, sound deadening. Thompson and Co., Oakmont, Pa.
Tankcaire—Dehumidifiers. Cargocaire Engineering Corp., New York, N. Y.
Tank-O-Meter—Gages, indicators. Uehling Instrument Co., Paterson, N. J.
Tanktrol—Regulators, switches, sprinkler system controls. Automatic Control Co., St. Paul, Minn.
Tannate—Packing. Rhoads & Sons, J. E., Wilmington, Del.
Tannate-Rockwood—Belt drives. Rhoads & Sons, J. E., Wilmington, Del.

Tantalum Fabricated Plate—Capacitors. P. R. Mallory & Co., Inc., Indianapolis, Ind.

Tapebinder—Industrial tape. Gerrard & Co., A. J., Melrose Park, Ill.

Taper-Lock—Couplings, V-belt drives, pulleys and sheaves. Dodge Mfg. Corp., Mishawaka, Ind.

Tasgon—Solvent. Cabot, Inc., Samuel, Boston, Mass.

Tasil—Furnace cement, refractories and refractory cement. Taylor Sons Co., Charles, Cincinnati, O.

Tayco-40—Furnace and refractory cement, refractories. Taylor Sons Co., Charles, Cincinnati.

Taycor—Refractories and refractory cement, furnace cement. Taylor Sons Co., The Charles, Cincinnati, O.

Teel—Pumps, circulators. Dayton Electric Mfg. Co., Chicago, Ill.

Teflon—Gaskets, plastic tubing. Chicago Gasket Co., Chicago, Ill.

Teflon—Pipe joints, packing. United States Gasket Co., Camden, N. J.

Teflon—Plastics, powder and resins. duPont deNemours & Co., E. I., Polychemicals Dept., Wilmington, Del.

Teflon-ize—Protective coatings. Chicago Gasket Co., Chicago, Ill.

Teksag—Boiler cleaning compounds. Agnew & Tomlinson, Long Island City, N. Y.

Tektolog—Recorders. Instrument Div., Robertshaw-Fulton Controls Co., Philadelphia, Pa.

Tektor—Switches, alarms. Instrument Div., Robertshaw-Fulton Controls Co., Philadelphia, Pa.

Tel-A-Pipe—Identification markers for piping. Westline Products Div. of Western Lithograph Co., Los Angeles, Calif.

Telecator—Gages, recorders and recorder-controllers. Automatic Control Co., St. Paul.

Telecode—Relays. Benjamin Electric Mfg. Co., Des Plaines, Ill.

Telescon—Recorders, recorder-controllers. Automatic Control Co., St. Paul, Minn.

Teletrol—Controllers and starters. Airgard Mfg. Co., Chicago, Ill.

Tellevel—Switches. Sealmaster Bearings, Div. of Stephens-Adamson Mfg. Co., Aurora, Ill.

Telltale—Valves. Watkins Co., J. E., Maywood, Ill.

Telstor—Gages, alarms. Instrument Div., Robertshaw-Fulton Controls Co., Philadelphia, Pa.

Teltru—Anemometers, gages, indicators. Hill & Co., E. Vernon, Lake Geneva, Wis.

Temflex—Plastic tubing. Irvington Div., Minnesota Mining & Mfg. Co., Irvington, N. J.

Temp-A-Rator—Valves. Beacon Brass Co., Waltham, Mass.

Tempchek—Insulation. Philip Carey Mfg. Co., Lockland, Cincinnati, O.

Temp-Guard—Motor controllers and starters, thermostats. Franklin Dales Co., Akron, O.

Temp-lo—Insulation. Lockport Mills, Inc., Lockport, N. Y.

Tempmaster—Thermostats. Crown Controls Co., Inc., New Bremen, O.

Tempoint—Thermometers. Bacharach Industrial Instrument Co., Pittsburgh, Pa.

Tempotherm—Thermostats. General Controls Co., Glendale, Calif.

Temp-R-izer—Burners. Labarco Industries, Minneapolis, Minn.

Temproof—Bases and pads. Lord Mfg. Co., Erie, Pa.

Tempscribe—Recorders. Bacharach Industrial Instrument Co., Pittsburgh, Pa.

Temtrim—Radiation. American Radiator & Standard Sanitary Corp., Plumbing & Heating Div., New York, N. Y.

Tenite—Plastics. Plastics Div., Eastman Chemical Products, Inc., Kingsport, Tenn.

Tenite Acetate—Plastics, powders and resins. Eastman Chemical Products, Inc., Subsidiary, Eastman Kodak Co., New York, N. Y.

Tenite Butyrate—Plastics, powders and resins. Eastman Chemical Products, Inc., Subsidiary, Eastman Kodak Co., New York, N. Y.

Tenite Polyethylene—Plastics, powders and resins. Eastman Chemical Products, Inc. Subsidiary, Eastman Kodak Co., New York, N. Y.

Tenite Propionate—Plastics, powders and resins. Eastman Chemical Products, Inc., Subsidiary, Eastman Kodak Co., New York, N. Y.

Tensilend—Arc welding electrodes. Arcos Corp., Philadelphia, Pa.

Tensulate—Insulation. Tennessee Products and Chemical Corp., Nashville, Tenn.

Tergitol—Water treatment. Union Carbide Chemicals Co., Div. of Union Carbide Corp., New York, N. Y.

Termin-o-Seal—Seals. Parker Seal Co., Culver City, Calif.

Testite—Fittings. General Fittings Co., East Greenwich, R. I.

Texalon—Plastic belting. Rhoads & Sons, J. E., Wilmington, Del.

Texan—Heaters. Hotstream Heater Co., Cleveland, O.

Texdrive—Pulleys and sheaves. Allis-Chalmers Mfg. Co., Milwaukee, Wis.

Texiron—Pulleys and sheaves. Allis-Chalmers Mfg. Co., Milwaukee, Wis.

Texrope—V-belt drives, pulleys, v-belts. Allis-Chalmers Mfg. Co., Milwaukee, Wis.

Texslide—Motor bases. Allis-Chalmers Mfg. Co., Milwaukee, Wis.

Textolite—Plastic sheets, plastic tubing. General Electric Co., Laminated Products Dept., Coshocton, O.

Texway—Bases. Allis-Chalmers Mfg. Co., Milwaukee, Wis.

T-Flo—Dehydrators. Ansul Chemical Co., Refrigeration Div., Marinette, Wis.

Thawzone—Dehydrant and acid neutralizer. Highside Chemicals, Inc., Clifton, N. J.

Therma-Cal—Nameplates. North Shore Nameplate Inc., Bayside, N. Y.

Thermaflex—Connectors, tubing, ducts, and duct fittings, hose. Flexible Tubing Corp., Guilford, Conn.

Therma-K Glass Fiber—Insulation. Ehret Magnesia Mfg. Co., Valley Forge, Pa.

Therma-Koil—Tubing. Radiant Heat and Cooling Co., Santa Clara, Calif.

Thermalbridge—Thermometers. Thompson Research & Mfg. Co., Davenport, Fla.

Thermalink—Heaters, preheaters. Electro-Therm, Inc., Silver Spring, Md.

Thermal Electric—Systems. Fluid Systems, Inc., New Haven, Conn.

Thermalite 85% Magnesia—Insulation. Ehret Magnesia Mfg. Co., Valley Forge, Pa.

Thermalite—High temperature paint. Tropical Paint Co., Cleveland, O.

Thermasil Calcium Silicate—Insulation. Ehret Magnesia Mfg. Co., Valley Forge, Pa.

Thermatrol—Compressors, cooling towers, valves. Schnacke, Inc., Evansville, Ind.

Thermatube—Pre-insulated pipe. Flexible Tubing Corp., Guilford, Conn.

Thermek—Tubing, aftercoolers, chillers, coils, condensers, coolers, exchangers, preheaters, surface cooling. Heatron, Inc., York, Pa.

Thermidaire—Furnaces, heaters, heating and ventilating units, air conditioning units. Campbell Co., E. K., Kansas City, Mo.

Thermo—Expansion valves. Alco Valve Co., St. Louis, Mo.

Thermobank—Systems, compressors. Kramer Trenton Co., Trenton, N. J.

Thermo-Base—Air diffusers. Gerwin Industries, Inc., Michigan City, Ind.

Thermobestos—Pipe, boiler and tank insulation. Johns-Manville, New York, N. Y.

Thermobloc—Heaters. Prat-Daniel Corp., Thermobloc Div., South Norwalk, Conn.

Thermo Clix—Switches. Nason Co., Clarkston, Mich.

Thermodulor—Control systems. Carvell Heat Equipment Co., Los Angeles, Calif.

Thermoflex—Strainers, radiator orifices, traps, valves. Cashin Co., W. D., Boston, Mass.

Thermo Grip—Torches. Ideal Industries, Inc., Sycamore, Ill.

Thermoguide—Thermometers. Taylor Instrument Companies, Rochester, N. Y.

Thermo-Humidigraph — Recorder-controllers. Bristol Co., The, Waterbury, Conn.

Thermoil-Granodine—Protective coatings. Amchem Products, Inc., Ambler, Pa.

Thermojet—Systems. International Boiler Works Co., The; East Stroudsburg, Pa.

Thermolite—Plastics, powders and resins. Metal & Thermit Corp., Rahway, N. J.

Thermolier—Unit heaters. Grinnell Co., Inc., Providence, R. I.

Therm-O-Mite—Valves. Beacon Brass Co., Waltham, Mass.

Thermopane—Windows. Libbey-Owens-Ford Glass Co., Toledo, O.

Thermoseal—Windows. Russell Co., F. C., The, Cleveland, O.

Thermoswitch—Thermostats, regulators. Fenwal, Inc., Ashland, Mass.

Therm-o-tile—Conduit. Porter & Co., Inc., H. W., Newark, N. J.

ThermoTrode—Electrodes. Eutectic Welding Alloys Corp., Flushing, N. Y.

Thermotrol—Valves. Sterling, Inc., Milwaukee, Wis.

Therm-O-Tron—Electric pipe thawers. Trindl Products, Ltd., Chicago, Ill.

Thermovent—Unit ventilators. Nesbitt, Inc., John J., Philadelphia, Pa.

Thermwire—Cables. Wiegand Co., Edwin L., Pittsburgh, Pa.

Thermxchanger—Condensers, converters, coolers, heaters, exchangers. Cooley Co., E. C., San Francisco, Calif.

Thick Coat—Protective coatings. Pennsalt Chemicals Corp., Philadelphia, Pa.

Thick or thin—Cement and compounds. Jet-Lube, Inc., Burbank, Calif.

Thinline—Air conditioning units. General Electric Co., Appliance & Television Receiver Div., Louisville, Ky.

Thin Man—Registers. Register & Grille Mfg. Co., Inc., Brooklyn, N. Y.

Thin Tube—Radiation. National-U.S. Radiator Corp., Johnstown, Pa.

Thor—Belting. Goodyear Tire & Rubber Co., Akron, O.

Thorobred cog-belt—V belts and v-belt drives. Dayton Rubber Co., Dayton, O.

Thoro-Mix—Burners. Power-Flame Div., Inc., Grandview, Mo.

Thread-Tite—Cement and compounds. Armite Laboratories, Los Angeles, Calif.

Thred-O-Matic "22" & "44"—Machines, Pipe Cutting. Collins Machinery Corp., Los Angeles, Calif.

Thredolets—Fittings. Bonney Forge & Tool Wks., Allentown, Pa.

3C—Motor controls. Clark Controller Co., Cleveland, O.

360—Pipe repair clamps. Dresser Mfg. Div., Dresser Industries, Inc., Bradford, Pa.

3M—Cements and compounds, insulation, plastic pipe. Minnesota Mining & Mfg. Co., St. Paul, Minn.

3 Way Weather-Flo—Thermostats. Automatic Devices Co., Inc., Western Springs, Ill.

Thrift-Line—Plastic pipe. Skyline Industries Sales, Inc., Titusville, Pa.

Thriftmaster—Convection radiation. General Heating Products Co., Philadelphia, Pa.

Thriftmaster—Water softeners. Modern Div., George Getz Corp., Freeport, Ill.

33-Series—Cooling towers. Havens Cooling Tower, Div. of Havens Structural Steel Co., Kansas City, Mo.

Throway—Air filters. American Air Filter Co., Inc., Louisville, Ky.

Thunder-Twist—Drills. New England Carbide Tool Co., Inc., Medford, Mass.

Thur-Ma-Lox—Coatings. Dampney Co., Boston, Mass.

TI-CO—Galvanized sheet steel. Inland Steel Co., Chicago, Ill.

TI-CO—Galvanized sheet steel. Inland Steel Products Co., Milwaukee, Wis.

Ticotherm—Boilers. Titusville Iron Works Co., The, Titusville, Pa.

Tiger—Packing. Boston Woven Hose & Rubber Co., Div. of American Biltrite Rubber Co., Cambridge, Mass.

Tillotson—Steam traps. Henry Owens & Co., Inc., Cranston, R. I.

Tilt Trap—Steam traps. Nason Co., Clarkston, Mich.

Time-O-Stat—Thermostats. Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.

Tin-Ezy—Coatings, solder and fluxes. Johnson Mfg. Co., Inc., Mt. Vernon, Ia.

Tinol—Solder and fluxes. American Solder & Flux Co., Philadelphia, Pa.

Tiny—Traps. Nason Co., Clarkston, Mich.

Titan—Traps. Nason Co., Clarkston, Mich.

Tite Kote—Sheets. Reeves Steel & Mfg. Co., Div. of Empire-Reeves Steel Corp., Dover, O.

Tite Seal—Cement and compounds. Radiator Specialty Co., Charlotte, N. C.

Toastmaster—Heaters. McGraw-Edison Co., Clark Div. & Tropic-Aire Div., Chicago, Ill.

Tom Thumb Pipe Master—Pipe machines. Oster Mfg. Co., Wickliffe, O.

Tonrac—Compressors. American Blower Div. of American-Standard, Detroit, Mich.

Tool-Arc—Electrodes. Alloys Rods Co., York, Pa.

Toolweld—Electrodes. Lincoln Electric Co., Cleveland, O.

Torchweld—Regulators, torches, welding and cutting apparatus. National Cylinder Gas Div. of Chemetron Corp., Chicago, Ill.

Tork Master—Switches. Tork Time Controls, Inc., Mt. Vernon, N. Y.

Tork-Master—Operators. General Controls Co., Glendale, Calif.

Torkotherm—Switches. Tork Time Controls, Inc., Mt. Vernon, N. Y.

Tork Weather Control—Switches. Tork Time Controls, Inc., Mt. Vernon, N. Y.

Torpedo—Dehydrators, filters, strainers. Imperial Brass Mfg. Co., Chicago, Ill.

Torq-Stop—Wrenches. Richmont, Inc., Monrovia, Calif.

Torque-Arm—Reducers, drives. Dodge Mfg. Corp., Mishawaka, Ind.

T.O. Silencer—Sound absorbers. Hansson, Inc., Elof, Acoustical Div., New York, N. Y.

Totalume—Paint. Wilbur & Williams Co., Brighton, Mass.

Totrust—Protective coatings, enamels and lacquers. Wilbur & Williams Co., Brighton, Mass.

Trace—Refrigerant leak detectors. Highside Chemicals, Inc., Clifton, N. J.

Tramrail—Conveyors. Cleveland Crane & Eng. Co., Wickliffe, O.

Transaire—Transmitters. Taylor Instrument Companies, Rochester, N. Y.

Transet—Regulators. Taylor Instrument Companies, Rochester, N. Y.

Transflex—Plastic tubing. Irvington Div., Minnesota Mining and Mfg. Co., Irvington, N. J.

Transite—Pipes, ducts and duct fittings, sheets and board. Johns-Manville, New York, N. Y.

Transparent—Analyzers, gages, kits, meters, switches, testers, tubes, manometers. Dwyer Mfg. Co., F. W., Michigan City, Ind.

Trap-Dri—Dehydrators. A-P Controls Div., Controls Co. of America, Milwaukee, Wis.
Treet-O-Control—Steam system and water treatment, pumps. Proportioneers, Inc., Div. of B-I-F Industries, Inc., Providence, R. I.
Treet-O-Unit—Feeders, pumps, water treatment. Proportioneers, Inc., Div. of B-I-F Industries, Inc., Providence, R. I.
Trenchliners—Trenching machines. Parsons Co., Div. of Koehring Co., Newton, Ia.
Trentweld—Tubing, pipe. Crucible Steel Co. of America, Pittsburgh, Pa.
Triad—Stocks and dies. Nye Tool Co., Chicago, Ill.
Tribune—Hose. Continental Rubber Wks., Erie, Pa.
Tri-Clad—Motors. General Electric Co., Apparatus Dept., Schenectady, N. Y.
Trident—Meters. Neptune Meter Co., New York, N. Y.
Tri-Flex—Registers, grilles. Tuttle & Bailey, Div. of Allied Thermal Corp., New Britain, Conn.
Tri-Flux—Motors. Redmond Co., Inc., Owosso, Mich.
Tri-Flux—Solder. Wolfe-Kote Co., Inc., Sheboygan, Wis.
Tri-Guard—Protective coatings. Foster Co., Benjamin, Philadelphia, Pa.
Tri-Lug—Unions. Rockwood Sprinkler Co., Worcester, Mass.
TrimBoy—Air heaters. Coleman Co., Inc., Wichita, Kans.
Trimline—Radiation. Vulcan Radiator Co., Hartford, Conn.
Trimo—Cutters. Armstrong Bros. Tool Co., Chicago, Ill.
Trimo—Pipe wrenches. Trimont Mfg. Co., Div. of St. Pierre Chain Corp., Worcester, Mass.
Trimo Alloy—Pipe wrenches. Trimont Mfg. Co., Div of St. Pierre Chain Corp., Worcester, Mass.
Trimo Spiral Grip—Pipe wrenches. Trimont Mfg. Co., Div. of St. Pierre Chain Corp., Worcester, Mass.
Trio-Stat—Heating systems, thermostats. Johnson Service Co., Milwaukee, Wis.
Triple-A—Enamels and lacquers, paint, protective coatings. Quigley Co., Inc., New York.
Triple-Seal—Fittings. Imperial Brass Mfg. Co., Chicago, Ill.
Triplex—Stocks and dies. Nye Tool Co., Chicago, Ill.
Tripl-Aire—Grilles, registers. Hart & Cooley Mfg. Co., Holland, Mich.
Tri-Rotor—Pumps. Yale & Towne Mfg. Co., White Plains, N. Y.
Tri-Sul-Ite—Pipe and tubing insulation. Ziegler & Co., G. S., Great Neck, N. Y.
Trojan—Boilers. Burnham Corp., Irvington, N. Y.
Trojan—Stokers. Auburn Burner Co., Auburn, Ind.
Trombone—Finned surface. Nesbitt, Inc., John J., Philadelphia, Pa.
Tropelite—Coatings. Tropical Paint Co., Cleveland, O.
Tropic-Aire—Heaters. Coolerator Div., McGraw-Edison Co., Albion, Mich.
Tropic-Aire—Air conditioning units. McGraw-Edison Co., Clark Div. & Tropic-Aire Div., Chicago.
Tropic-Breeze—Air conditioning units, burners. Dalzen Mfg. Co., St. Clair, Mich.
Tropilux—Enamels and lacquers. Tropical Paint Co., Cleveland, O.
Tru-Air—Air conditioning units, surface, systems, condensers, cooling towers, eliminators, exchangers, heaters. Blazer & Son, M., Passaic, N. J.
True Heat—Radiation. Pacific Steel Boiler Div., National-U.S. Radiator Corp., Johnstown, Pa.
True-Pitch Level—Tools. Dreier Bros., Inc., Chicago, Ill.
Truespot—Testers. Bacharach Industrial Instrument Co., Pittsburgh, Pa.
Truflex—Bi-metals. General Plate Div., Metals & Controls Corp., Attleboro, Mass.
Truflex—Drives, v-belts. Gates Rubber Co., The, Denver, Colo.
Tru-Grip—Pulleys and sheaves. Gates Rubber Co., Denver, Colo.
Truk-Cel—Unit coolers. Dole Refrigerating Co., Chicago, Ill.
Truliradiant—Gas burners. Sullivan Valve & Engineering Co., Butte, Mont.
Tru-Perimeter—Heating systems. Webster & Co., Warren, Camden, N. J.
Tru-Set—Fasteners. Ramset Fastening System, Winchester-Western Div., Olin-Mathieson Chemical Corp., Cleveland, O.
Try-Me—Regulators, filters, strainers, valves. Tryco Products, Inc., Westfield, Mass.
Tube-alloy—Electrodes. McKay Co., Pittsburgh, Pa.
Tubecote—Protective coatings. Wilhelm Co., A., Reading, Pa.
Tuff-Bond—Adhesives, cement, insulation. Moore Inc., Goodloe E., Danville, Ill.
Tufflex—Bases and pads, insulation. Wood Conversion Co., St. Paul, Minn.
Tuf-flex—Gage and sight glasses. Libbey-Owens-Ford Glass Co., Toledo, O.
Tuff-Weld—Fasteners, hangers. Moore Inc., Goodloe E., Danville, Ill.
Tuf-On—Protective coatings. Brooklyn Paint & Varnish Co., Inc., Brooklyn, N. Y.
Tulox—Tubing. Extruded Plastics, Inc., Norwalk, Conn.
Tumblin—Bolts. Star Expansion Industries Corp., Mountainville, N. Y.
Turbinair—Motors. Joy Mfg. Co., Pittsburgh, Pa.
Turbo—Air washers. Bayley Blower Co., Milwaukee, Wis.
Turbo-Aire—Overfire air jets, smoke alarms. Canton Stoker Corp., Canton, O.
Turbo-Fire—Burners. Gordon & Piatt, Inc., Winfield, Ks.
Turbo Heat—Burners. Barber Mfg. Co., Cleveland, O.
Turbo-Ring—Burners. Gordon & Piatt, Inc., Winfield, Kans.
Turbo Vane—Fans and blowers. Westinghouse Electric Corp., Sturtevant Div., Boston, Mass.
Turbulaire—Dryers. Western Precipitation Corp., Los Angeles, Calif.
Turcoat—Coatings. Turco Products, Inc., Los Angeles, Calif.
Twindow—Heat insulating windows. Pittsburgh Plate Glass Co., Pittsburgh, Pa.
Twin G-Fin—Preheaters. Griscom-Russell Co., Massillon, O.
Twin Seal—Check valves, gage testers. Mansfield & Green, Inc., Cleveland, O.
Two-Tank-1—Oil burner filters. Barclay, Inc., Robert, Chicago, Ill.
Tygon—Protective coatings, plastic tubing. United States Stoneware Co., New York, N. Y.
Tygon—Protective coatings, plastic tubing. United States Stoneware Co., Plastics & Synthetics Div., Akron, O.
Tylox—Pipe couplings. United States Stoneware Co., New York, N. Y.
Tyte-Unyte—Cement and compounds. Whitlam Mfg. Co., J. C., Wadsworth, O.

U-Brand—Fittings. Union Malleable Mfg. Co., Ashland, O.
USG—Louvers and shutters. United States Gypsum Co., Chicago, Ill.
U. S. S.—Angles, sheets. United States Steel Co., Pittsburgh, Pa.
USS—Pipe, tubing. National Tube Div., United States Steel Corp., Pittsburgh, Pa.
U-S-S—Sheets, angles. Columbia-Geneva Steel Div., United States Steel Corp., San Francisco, Calif.
U. S.—Valves. Powell Co., Wm., The, Cincinnati, O.
U. S. Royal—Packing. United States Rubber Co., New York, N. Y.
UXLD—Regulators. Duro-Dyne Corp., Farmingdale, Long Island, N. Y.
Ucilon—Protective coatings, enamels and lacquers, tank linings, high temperature paint. Metal & Thermit Corp., Rahway, N. J.
Ucon—Lubricants, oils, fluorocarbon refrigerants. Union Carbide Chemicals Co., Div. of Union Carbide Corp., New York, N. Y.
U-Cote—Pipe fittings. Union Malleable Mfg. Co., Ashland, O.
Ultra-Aire—Filters. Mine Safety Appliances Co., Pittsburgh, Pa.
Ultra-filtration—Air filters. Wheelabrator Corp., Mishawaka, Ind.
Ultrafine—Insulation. Gustin-Bacon Mfg. Co., Kansas City, Mo.
Ultraflo—Protective coatings, enamels and lacquers. Interchemical Corp., Finishes Div., Newark, N. J.
Ultra-Line—Plastic pipe. Skyline industries Sales, Inc., Titusville, Pa.
Ultralite—Insulation. Gustin-Bacon Mfg. Co., Kansas City, Mo.
Ultra-Viscoson—Viscosimeters. Bendix Aviation Corp., Cincinnati, O.
Una-Dyn—Dehumidifiers, industrial dryers, indicator-controllers, indicators, recorder-controllers, recorders. Universal Dynamics Corp., Arlington, Va.
Unarco—Insulation, gaskets, packing, insulating cement, condensers, heaters, radiation, surface cooling & heating, air conditioning units. Union Asbestos & Rubber Co., Chicago, Ill.
Unbrako—Parts for heating & air conditioning equipment, socket screws. Standard Pressed Steel Co., Jenkintown, Pa.
Underflow—Cooling Towers. Marley Co., The, Kansas City, Mo.
Uni-Built—Pumps. Bell & Gossett Co., Morton Grove, Ill.
Uni-cast—Motors. Redmond Co., Inc., Owosso, Mich.
Unichiller—Compressors. Vilter Mfg. Co., The, Milwaukee, Wis.
Unichrome—Protective coatings, enamels and lacquers, tank linings. Metal & Thermit Corp., Rahway, N. J.
Uniclosed—Electric motors. U. S. Electrical Motors, Inc., Los Angeles, Calif.
Unicoils—Finned surfaces. Clarage Fan Co., Kalamazoo, Mich.
Unicon—Refrigerating condensers. Kramer Trenton Co., Trenton, N. J.
UNIFIL—Connectors. Scully Signal Co., Melrose, Mass.
Uniflare—Fittings. Scovill Mfg. Co., Waterbury, Conn.
Uni-Flo Air Valves—Valves. Barber-Colman Co., Rockford, Ill.
Uni-flo—Diffusers, grilles, mixing units, regulators, registers. Barber-Colman Co., Rockford, Ill.
Uniflow—Oil burners. Ace Engineering Co., Chicago, Ill.
UniMatic—Electrodes. Eutectic Welding Alloys Corp., Flushing, N. Y.
Unimount—Pumps. March Mfg. Co., Inc., Skokie, Ill.
Union—Valves. Powell Co., Wm., The, Cincinnati, O.
Union—Incinerators. Syrall Mfg. Co., Syracuse, N. Y.
Unipack—Welding fume exhausters, centrifugal fans. American Machine Products Co., Marshalltown, Ia.
Unipak—Electrical capacitors. Sprague Electric Co., North Adams, Mass.
Unipar—Cement and compounds. Rubber Products Div., Parker-Hannifin Corp., Cleveland, O.
Unipump—Pumps. Weinman Pump Mfg. Co., Columbus, O.
Uni-Resonator—Sound absorbers. Hansson, Inc., Elof, Acoustical Div., New York, N. Y.
Uniseal—Electric motors. Franklin Electric Co., Inc., Bluffton, Ind.
Unishear—Shears. Stanley Works, The, New Britain, Conn.
Unishears—Electric shears. Stanley Electric Tools, Div. of The Stanley Works, New Britain, Conn.
Uni-Silencer—Absorbers. Elof Hansson, Inc., Acoustical Div., New York, N. Y.
Unisorb—Bases and pads. Felters Company, The, Boston, Mass.
Unistage—Aftercoolers. Schramm, Inc., West Chester, Pa.
UniStoker—Stokers. Detroit Stoker Co., Monroe, Mich.
Uni-Strainer—Strainers. Perfecting Service Co., Charlotte, N. C.
Unitair—Air compressors. Joy Mfg. Co., Pittsburgh, Pa.
Unitaire—Air conditioning units. Westinghouse Electric Corp., Air Conditioning Div., Staunton, Va.
Unitem—Heaters. Bell & Gossett Co., Morton Grove, Ill.
Unitherm—Unit heaters. Clarage Fan Co., Kalamazoo, Mich.
Unit Fin—Radiation. Vapor Heating Corp., Chicago, Ill.
Unitite—Valves. Hanna Engineering Wks., Chicago, Ill.
Unit-Line—Pumps. Johnston Pump Co., A Div. of the Youngstown Sheet & Tube Co., Pasadena, Calif.
UniTrane—Air conditioning units and coolers. Trane Co., The, La Crosse, Wis.
Uni-Trap—Steam traps. Perfecting Service Co., Charlotte, N.-C.
Unitrol—Boards. Cutler-Hammer, Inc., Milwaukee, Wis.
Universal—Benders. Hossfeld Mfg. Co., Winona, Minn.
Universal—Cast iron pipe. Central Foundry Co., Newark, N. J.
Universal—Centrifugal pumps. Valve & Gossett Co., Morton Grove, Ill.
Universal—Gas and oil burners. Mettler Co., Inc., The, Div. of Eclipse Fuel Engineering Co., Rockford, Ill.
Universal—Packing. Johns-Manville, New York, N. Y.
Universal—Pumps. Wright Mfg. Co., Phoenix, Ariz.
Universal—Regulators. Dockson Corp., Detroit, Mich.
Universal CP—Drills. Chicago Pneumatic Tool Co., New York, N. Y.
Universal Unaflow—Engines. Skinner Engine Co., Erie, Pa.
Univers-L-Mount—Pumps. March Mfg. Co., Inc., Skokie, Ill.
Uni-Wash—Dust collectors. Newcomb-Detroit Co., Detroit, Mich.
Uno Turbine—Ventilators. Uno Ventilator Co., Malden, Mass.
Uno Venturette—Ventilators. Uno Ventilator Co., Malden, Mass.
Urefoam—Insulating cement, pipe insulation. Atlas Mineral Products Co., Mertztown, Pa.
Urethane—Protective coatings. Saran Lined Pipe Co., Ferndale, Mich.
UsAIRco—Air conditioning equipment, exhauster units, blowers, condensers, surfaces, heaters. United States Air Conditioning Corp., Delaware, O.
Uscolite—Plastic pipe, fittings, plastic valves. United States Rubber Co., New York, N. Y.
Util-i-Torch—Torches. Turner Brass Works, The, Sycamore, Ill.
Utilitube.—Aluminum tubing. Aluminum Co. of America, Pittsburgh, Pa.
Utility—Blowers. American Blower Div. of American-Standard, Detroit, Mich.

Utility—Roof ventilators. Arex Co., Chicago.
Utility—Heaters. Wing Mfg. Co., L. J., New York, N. Y.

VB Reflecto-Batt—Insulation. Barrett Div., Allied Chemical & Dye Corp., New York, N. Y.
VL-5—Lubricants. Jet-Lube, Inc., Burbank, Calif.
V Line—Tools. Millers Falls Co., Greenfield, Mass.
VP-Ex—Ventilators. New York Blower Co., Chicago, Ill.
VRC—Air Conditioning units. Drayer-Hanson, Div. of National U. S. Radiator Corp., Los Angeles, Calif.
V*S—Changers. Reliance Electric & Engineering Co., Cleveland, O.
Vacu-Flo—Fittings. H-P Products, Inc., Louisville, O.
Vacumatic—Ejectors, pumps. Whittington Pump & Engineering Corp., Indianapolis.
Vacuum Cold Plate—Coils and panels. Dole Refrigerating Co., Chicago, Ill.
Vacuumstat—Switches. Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.
Valcalox—Dampers, regulators. Young Regulator Co., Cleveland, O.
Val-Pac—Packing. Houghton & Co., E. F., Philadelphia, Pa.
Valvactor—Valve operators. Foxboro Co., Foxboro, Mass.
Valvatrol—Valves, diaphragm. Squires Co., C. E., The, Cleveland, O.
Valvent—Roof ventilators. Swartwout Co., Cleveland, O.
Valvrator—Valves. Fischer & Porter Co., Hatboro, Pa.
Vanco—Louvers and shutters. Van Noorden Co., E., Boston, Mass.
Vanco Exhaustmaster—Ventilators. Van Noorden Co., E., Boston, Mass.
Vanco "QR"—Ventilators. Van Noorden Co., E., Boston, Mass.
Vanco Simplex—Ventilators. Van Noorden Co., E., Boston, Mass.
Vanco Upblast—Ventilators. Van Noorden Co., E., Boston, Mass.
Van Cor—Ducts and duct fittings, plastic pipe fittings, hoods, pipe joints, plastic unions, plastic pipe, plastic sheets, valves, pipe nipples, pipe flanges, tank linings, tanks. Colonial Plastics Mfg. Co., Industrial Div., Cleveland, O.
Vapco—Compounds. Garman Co., Inc., The, St. Louis, Mo.
Vapco-Phos Nuggets—Water treatment. Garman Co., Inc., The, St. Louis, Mo.
Vapco Slime-X—Water treatment. Garman Co., Inc., The, St. Louis, Mo.
Vape-Sorber—Filters. Selas Corp. of America, Dresher, Pa.
Vapomatic—Hot gas defrosting systems. Recold Corp., Los Angeles, Calif.
Vaporene—Compound and water treatment. Metropolitan Refining Co., Inc., Long Island City, N. Y.
Vapor-Clarkson—Heating and process boilers. Vapor Heating Corp., Chicago, Ill.
Vaporstat—Switches. Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.
Vapowall—Insulation, vapor barriers. MMM, Inc., Portsmouth, O.
Vari-Basic—Fan housings. Torrington Mfg. Co., The, Torrington, Conn.
Varidrive—Speed changers. U. S. Electrical Motors, Inc., Los Angeles, Calif.
Vari-Pitch—Speed changers, drives, pulleys and sheaves. Allis-Chalmers Mfg. Co., Milwaukee, Wis.
Vari-Speed Drives—Speed changers. Reeves Pulley Co., Div. of Reliance Electric & Engineering Co., Columbus, Ind.
Vari-Temp—Air conditioning units. Dunham-Bush. Inc., West Hartford, Conn.
Vari-Tex—Drives. Allis-Chalmers Mfg. Co., Milwaukee, Wis.
Vari-Vac—Heating systems, control systems. Dunham-Bush, Inc., West Hartford, Conn.
Vaultmaster—Air conditioning units. Haertel Co., Walter, Minneapolis, Minn.
Vcon—Oil. Union Carbide Chemicals Co., Div. of Union Carbide Corp., New York, N. Y.
Veco—Analyzers, combustion testing kits, Recorders, thermometers. Victory Engineering Corp., Union, N. J.
Veeco—Leak detectors. Vacuum-Electronic Engineering Co., New Hyde Park, L. I., N. Y.
Veegroo—Valves. General-American Valve Co., Corona Del Mar, Calif.
Vee Jet—Spray nozzles. Spraying Systems Co., Bellwood, Ill.
Veelos—V-belts. Manheim Mfg. & Belting Co., Manheim, Pa.
Velometer—Air velocity meters. Illinois Testing Laboratories, Inc., Chicago.
Velvetrol—Valves. J. D. Gould Co., Indianapolis, Ind.
VENTALARM—Alarms, gages. Scully Signal Co., Melrose, Mass.
Ventbestus—Connections, duct, flexible. Ventfabrics, Inc., Chicago, Ill.
Ventfab—Flexible duct connections. Ventfabrics, Inc., Chicago, Ill.
Ventflo—Valves. Quality Specialty Co., Inc., Camden, N. J.
Ventglas—Connections, duct, flexible. Ventfabrics, Inc., Chicago, Ill.
Ventlok—Doors and panels, parts for heating and air conditioning equipment. Ventfabrics, Inc., Chicago, Ill.
Vento—Traps. Haines & Co., Wm. S., Div. Sellers Injector Corp., Philadelphia.
Ventura—Fans. American Blower Div. of American-Standard, Detroit, Mich.
Venturafin—Unit heaters. American Blower Div. of American-Standard, Detroit, Mich.
Venturi—Fan housings. Commercial Shearing & Stamping Co., Youngstown, O.
Venturi—Meters, nozzles. Builders-Providence Div., B-I-F Industries Inc., Providence, R. I.
Venturi-Flo—Air diffusers. Barber-Colman Co., Rockford, Ill.
Venturi One—Fittings. Taco Heaters, Inc., Cranston, R. I.
Venturi-Top—Caps, roof ventilators. Walker Mfg. & Sales Co., St. Joseph, Mo.
Vent-Vac—Heating systems. Anderson Products, Inc., Cambridge, Mass.
Ventyvinyl—Connections. Ventfabrics, Inc., Chicago, Ill.
Verco—Insulating cement. Nelson Mfg. Co., B. F., Minneapolis, Minn.
Verithin-Microroid—Steel sheets. Washington Steel Corp., Washington, Pa.
Vermiculite—Insulation. Nelson Mfg. Co., B. F., Minneapolis, Minn.
Vernier-Set—Time switches. Automatic Timing & Controls, Inc., King of Prussia, Pa.
Vertex—Paint. Whitlam Mfg. Co., J. C., Wadsworth, O.
Vertiflow—Unit heaters. Young Radiator Co., Racine, Wis.
V-Flat—Pulleys and sheaves. Dayton Rubber Co., Dayton, O.
Vibracork—Bases and pads. Korfund Co., Inc., Long Island City, N. Y.
Vibraducer—Absorbers. Atlantic Metal Hose Co., Inc., New York, N. Y.
Vibra Free—Absorbers. Williamson Co., The, Cincinnati, O.
Vibra grate—Stokers. American Engineering Co., Philadelphia, Pa.
Vibra-Joint—Pipe joints. Saussé & Co., M. W., Los Angeles, Calif.
Vibrashock—Bases and pads. Robinson Aviation, Inc., Teterboro, N. J.
Vibra-sorber—Vibration absorbers. Flexonics Corp., Maywood, Ill.
Vibrastop—Duct connections. Grant Wilson, Inc., Chicago, Ill.
Vibrex—Bases and pads, hangers and supports. Saussé & Co., M. W., Los Angeles, Calif.
VibrJoint—Absorbers. LaFavorite Rubber Mfg. Co., Hawthorne, N. J.
Vibro-Hangers—Pipe hangers and supports, absorbers. Korfund Co., Inc., Long Island City, N. Y.
Vibro-Isolators—Bases and pads, vibration absorbers. Korfund Co., Inc., Long Island City, N. Y.
Vichrome—Coatings, enamels. Interchemical Corp., Finishes Div., Newark, N. J.
Victor—Water heaters. Cleveland Heater Co., Inc., Cleveland, O.
Victory—Registers. Register & Grille Mfg. Co., Inc., Brooklyn, N. Y.
Viking—Welders. Mid-States Welder Mfg. Co., Chicago, Ill.
V-in-Tah—Paint. Valdura Div., American-Marietta Co., Chicago, Ill.
Vim—Belting, gaskets, leather packing. Houghton & Co., E. F., Philadelphia, Pa.
Vim Tred—Leather belting. Houghton & Co., E. F., Philadelphia, Pa.
Vinsynite—Coatings. Thompson and Co., Oakmont, Pa.
Vinyl—Protective coatings. Watson-Standard Co., Pittsburgh, Pa.
Vinylgrip—Adhesives for pipe covering. Adhesive Products Corp., New York, N. Y.
Visaflame—Controls. Mercoid Corp., The, Chicago, Ill.
Viscograph—Viscosimeters. Brabender Corp., Rochelle Park, N. J.
Viscomparator—Viscosimeters. Bendix Aviation Corp., Cincinnati, O.
Viscorator—Viscosimeters. Fischer & Porter Co., Hatboro, Pa.
Visi-Flo—Sight glasses for pipe lines. Jordan Corp., Div. of OPW Corp., Cincinnati, O.
Viso Flo—Sight glasses. O P W Corp., Cincinnati, O.
Visoleak—Leak detectors. Allin Mfg. Co., Chicago, Ill.
Vitalic—Hose. Continental Rubber Wks., Erie, Pa.
Vitalloy—Wrenches. Billings & Spencer Co., Hartford, Conn.
Vitreon—Pipe. Robinson Clay Products Co., Inc., The, Akron, O.
Vitricel—Refractories. Carey Mfg. Co., Philip, The, Lockland, Cincinnati, O.
Vitrilan—Protective coatings for metals, enamels and lacquers. Interchemical Corp., Finishes Div., Newark, N. Y.
Vitriram—Furnace cement. United States Stoneware Co., New York N. Y.
Vitroliner—Pipe and fittings, stacks and chimneys. Condensation Engineering Corp., Chicago, Ill.
Vix-Syn—Rubber and synthetic packing. Houghton & Co., E. F., Philadelphia, Pa.
V-Meth-L—Refrigerants. Virginia Smelting Co., West Norfolk, Va.
Voladjuster—Dampers. Barber-Colman Co., Rockford, Ill.
Volcano—Ventilators. Iwan Brothers, South Bend, Ind.
Vol-O-Flo—Meters. National Instrument Laboratories, Inc., Washington, D. C.
Vornado—Fans, air conditioning units. Sutton Corp., O. A., The, Wichita, Kans.
Vortex—Pumps. Lawrence Pump and Engine Co., Lawrence, Mass.
V-Series—Cooling towers. Havens Cooling Tower, Div. of Havens Structural Steel Co., Kansas City, Mo.
V-to-V—Pulleys and sheaves. Dayton Rubber Co., Dayton, O.
Vulcalock—Linings, tank; adhesives. Goodrich Industrial Products Co., B. F., Akron, O.
Vulcan—Stands, tongs, vises. Williams & Co., J. H., Buffalo, N. Y.
Vulcan—Stokers. Canton Stoker Corp., Canton, O.
Vulcan Superior—Tongs, vises. Williams & Co., J. H., Buffalo, N. Y.
Vulco—Pulleys. Gates Rubber Co., Denver, Colo.
Vulco Ropes—Belts, drives. Gates Rubber Co., Denver, Colo.
Vulcomount—Pulleys. Gates Rubber Co., Denver, Colo.
Vyflex—Tank linings. Kaykor Industries, Inc., Yardville, N. J.

W. & McD.—Strainers. Watson & McDaniel Co., Philadelphia, Pa.
WMT—Cooling towers. Drayer-Hanson, Div. of National-U.S. Radiator Corp., Los Angeles, Calif.
WS—Valves. Powell Co., Wm., The, Cincinnati, O.
W & T—Chlorinators, feeders, gages, indicators. Wallace & Tiernan Inc., Belleville, N. J.
W.T.E.—Boilers. Murray Iron Works, Co., Burlington, Ia.
WTP—Boilers. Titusville Iron Wks. Co., The, Titusville, Pa.
W & W—Pipe hangers. Western Wire Products Co., St. Louis, Mo.
Wadco—Oil. Whitlam Mfg. Co., J. C., Wadsworth, O.
Waikiki—Heaters. Vapor Heating Corp., Chicago, Ill.
Wakefield—Coils, fittings, pipe, pumps, tanks and valves. Lead Lined Iron Pipe Co., Wakefield, Mass.
Walco-Parmelee—Wrenches. Walworth Co., New York, N. Y.
Walltube—Radiator brackets, or hangers. Arjac Products Inc., Rochester, N. Y.
Walseal—Fittings, valves. Walworth Co., New York, N. Y.
Walvector—Radiation. Webster & Co., Warren, Camden, N. J.
Warco—Fuel oil treatment. Warren Refining & Chemical Co., The, Cleveland, O.
Warcolite—Enamels and lacquers. Warren Refining & Chemical Co., The, Cleveland.
Warnock—Wrenches. Lowell Wrench Co., Worcester, Mass.
Watch Dog—Meters. Gamon Meter Div., Worthington Corp., Newark, N. J.
Watchman—Water heaters. Vapor Heating Corp., Chicago, Ill.
Watco—Cooling towers, systems. Water Cooling Corp., New York, N. Y.
Water-Boy—Feeders, valves. Maid-O'-Mist, Inc., Chicago, Ill.
Water-King—Pumps. Peerless Pump Div., Food Machinery and Chemical Corp., Los Angeles, Calif.
Water Master—Filters. Austin Engineering & Mfg. Co., Inc., Ysleta, Tex.
Water-Mund—Heaters. Western Boiler Co., Los Angeles, Calif.
Waterspar—Enamels and lacquers, Pittsburgh Plate Glass Co., Pittsburgh, Pa.
Wa-Trol—Regulators. Thermal Agency, Houston, Tex.
Way Loctor—Doors and panels. Walsh Co., The, L. M., Boston, Mass.
Wear-Arc—Electrodes. Alloy Rods Co., York, Pa.
Wear-Arc "Super WH"—Electrodes. Alloy Rods Co., York, Pa.
Wear-O-Matic—Electrodes. Alloy Rods Co., York, Pa.
Wearweld—Electrodes. Lincoln Electric Co., Cleveland, O.
Weather—Protective coatings. Minnesota Mining & Mfg. Co., St. Paul, Minn.
Weather-Analoy—Heating systems, thermostats. Johnson Service Co., Milwaukee, Wis.

Weather-Chron—Switches, control systems, regulators, thermostats. Automatic Devices Co., Inc., Western Springs, Ill.
Weather-Damper—Regulators. Automatic Devices Co., Inc., Western Springs, Ill.
Weather-Flo—Thermostats, control systems, heating systems, regulators. Automatic Devices Co., Inc., Western Springs, Ill.
Weathermaker—Unit air conditioners. Carrier Corp., Syracuse, N. Y.
Weather-Man—Regulators, thermostats, control systems. Automatic Devices Co., Inc., Western Springs, Ill.
Weathermaster—Air conditioning units. Carrier Corp., Syracuse, N. Y.
Weatherstat—Thermostats. Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.
Weathertrol—Air conditioning units. Therm-Air Mfg. Co., Peekskill, N. Y.
Weatherwise—Air conditioning units. Barkow Mfg. Co., Inc., Aug. G., Milwaukee, Wis.
Webco-Ray—Boilers. Western Boiler Co., Los Angeles, Calif.
Weber's—Insulation. Forty-Eight Insulations, Inc., Aurora, Ill.
Weco—Plugs, steel unions. Chiksan Co., Brea, Calif.
Wedgbelt—V belts and v-belt drives, pulleys. American Pulley Co., Philadelphia, Pa.
Wedge-Lock—Pipe, fittings. Robinson Clay Product Co., The, Akron, O.
Wedgeplug—Valves. Stockham Valves & Fittings, Birmingham, Ala.
Wedgemounts—Vibration bases. Air-Loc Div., Clark, Cutler, McDermott Co., Franklin, Mass.
Weir—Stokers. Meyer Furnace Co., The, Peoria, Ill.
Weir-Meyer—Furnaces, heaters. Meyer Furnace Co., The, Peoria, Ill.
Weldaluminite—Welding compounds. Special Chemicals Corp., Ossining, N. Y.
Weldanpower—Welders. Lincoln Electric Co., The, Cleveland, O.
WeldELLS—Welding fittings. Taylor Forge & Pipe Works, Chicago, Ill.
Weld-Ends—Pipe couplings, fittings. Pipe Line Development Co., Cleveland, O.
Weldfast—Pipe joint cement and compounds. Fibercast Co., Sand Spring, Okla.
Weldolets—Fittings. Bonney Forge & Tool Works, Allentown, Pa.
Weld-O-Vent—Welding fume exhausters. Engwald Corp., The, Inwood, Long Island, N. Y.
Weldrawn—Tubing. Superior Tube Co., Norristown, Pa.
Weldreel—Welders, welding and cutting apparatus. United Specialties, Inc., El Dorado, Ark.
Western—Fans, furnaces, heaters, air conditioning units. Tuck-Aire Furnace Co., San Francisco, Calif.
Westernaire—Fans. Western Engineering & Mfg. Co., Venice, Calif.
Western Roll-Bond—Heat exchangers. Olin Mathieson Chemical Corp., Metals Div., New York, N. Y.
West-Flex—Hose. Flexible Metal Hose Mfg. Co., Costa Mesa, Calif.
Wevelite—Insulation. Insulite Div., Minnesota & Ontario Paper Co., Minneapolis, Minn.
Whiffletree—Valves. Dahl, G. W., Bristol, R. I.
Whirlcone—Spray nozzles. Water Cooling Equipment Co., St. Louis, Mo.
Whirljet—Spray nozzles. Spraying Systems Co., Bellwood, Ill.
Whirlout—Ventilators. Swartwout Co., The, Cleveland, O.
Whistler—Alarms. Applied Mechanics Co., Boston, Mass.
White Star—Valves. Powell Co., Wm., The, Cincinnati, O.
Whiting Rust Cutter—Penetrant solvent. Claronex Products, Inc., Brooklyn, N. Y.
Wig-O-Flex—Couplings. Wiggins Oil Tool Co., Inc., E. B., Los Angeles, Calif.
Wigwam Thermcap—Vent flue caps. Boston Machine Works Co., Lynn, Mass.
Wilco—Bi-metals. Wilson Div., H. A., Engelhard Industries, Union, N. J.
Wilco—Pipe cutting machines. Oster Mfg. Co., Wickliffe, O.
Wimco—Tubing Cutters. Wilson Mfg. Co., Memphis, Tenn.
Wind-A-Clamp—Hose clamps. Manufacturers Corp., Mansfield, O.
Windmaster—Fans. Acme Engineering & Mfg. Corp., Muskogee, Okla.
Windmaster—Propeller fans, ventilators. Consolidated General Products, Inc., Houston, Tex.
Wind-O-Cool—Fans. Belco Industries, Inc., St. Louis, Mo.
Wind-O-Line—Ventilators. Nesbitt, Inc., John J., Philadelphia, Pa.
Wind-O-Vent—Window ventilator and filter units. Reed Unit-Fans, Inc., New Orleans.
Wingfoil—Exhausters, fans. Wing Mfg. Co., L. J., Div. of Aero Supply Mfg. Co., Inc., Linden, N. J.
Wingjet—Ventilators. Wing Mfg. Co., L. J., Div. of Aero Supply Mfg. Co., Inc., Linden, N. J.
Winkler—Burners, boilers, heaters, stokers. Stewart-Warner Corp., Heating & Air Conditioning Div., Lebanon, Ind.
Winter-Chaser—Air conditioning units, furnaces, heaters. Campbell Heating Co., Des Moines, Ia.
Wissco—Grilles. Wickwire Spencer Steel Div., The Colorado Fuel & Iron Corp., New York, N. Y.
Witch—Bolts, clamps, hangers, inserts, protectors. Carpenter & Paterson, Inc., Cambridge, Mass.
Wolf-Linde—Condensers, compressors, fittings, flanges, strainers, valves. Dersch, Gesswein & Neuert, Inc., Chicago, Ill.
Wondaire—Heaters, furnaces. Cox Mfg. Co., Ridgeville, Ind.
Wonder—Pipe benders. American Pipe Bending Machine Co., Inc., Poultney, Vt.
Wondercote Alkyd—Enamels and lacquers. Sonneborn Sons, Inc., L., Building Products Div., New York, N. Y.
Wonderglas—Heaters. Hotstream Co., Cleveland, O.
Wurtzilite—Coatings. Ohmlac Paint & Refining Co., Inc., Long Island City, N. Y.

X-L—Gaskets, packing. Excelsior Leather Washer Mfg. Co., Rockford, Ill.
XX—Sheet metal punches. Duro-Dyne Corp., Long Island, N. Y.
Xit—Ventilators. Iona Ventilator Co., Inc., Philadelphia, Pa.
Xyron—Electrodes. Eutectic Welding Alloys Corp., Flushing, N. Y.

YC—Air conditioning units. Young Radiator Co., Racine, Wis.
Yager's—Solder. Benson Co., Inc., Alex R., New Hartford, N. Y.
Yarway Fine Screen—Strainers. Yarnall-Waring Co., Philadelphia, Pa.
Yarway Gun-Pakt—Expansion pipe joints. Yarnall-Waring Co., Philadelphia, Pa.
Yarway Hi-Lo—Alarms. Yarnall-Waring Co., Philadelphia, Pa.
Yarway Hi-Lo-Graph—Recorders. Yarnall-Waring Co., Philadelphia, Pa.
Yarway Impulse—Steam traps. Yarnall-Waring Co., Philadelphia, Pa.
Yarway Involute—Spray nozzles. Yarnall-Waring Co., Philadelphia, Pa.
Yarway Remote—Indicators. Yarnall-Waring Co., Philadelphia, Pa.
Yarway Seatless—Valves. Yarnall-Waring Co., Philadelphia, Pa.
Yarway Unit-Tandem—Valves. Yarnall-Waring Co., Philadelphia, Pa.
Yarway Welbond—Valves. Yarnall-Waring Co., Philadelphia, Pa.
Yoloy—Pipe, sheet, tubing. Youngstown Sheet & Tube Co., Youngstown, O.
Yorkaire—Unit air coolers. York Corp., Subsidiary of Borg-Warner Corp., York, Pa.
Yulatrol—Fuel oil preheaters, leak detectors. Yula Corp., Bronx, N. Y.
Yulatour—Leak detectors, fuel oil preheaters. Yula Corp., Bronx, N. Y.

Zaflo—Enamels and lacquers. Glidden Co., Nubian Div., Chicago, Ill.
Zaponite—Enamels and lacquers. Glidden Co., Nubian Div., Chicago, Ill.
Zatex—Enamels and lacquers. Glidden Co., Nubian Div., Chicago, Ill.
Z-Crete—Pipe and concrete insulation. Zonolite Co., Chicago, Ill.
Zebogene—Treatment. Berna Corp., Garwood, N. J.
Zephyrcon—Condensers. Larkin Coils, Inc., Atlanta, Ga.
Zero—Cement, refractories. Standard Fuel Engineering Co., Detroit, Mich.
Zer-O-Disc—Finned surface. Vilter Mfg. Co., The, Milwaukee, Wis.
Zerofrost—Systems. McQuay, Inc., Minneapolis, Minn.
Zerolite—Pipe insulation. Johns-Manville, New York, N. Y.
Zeropaks—Coolers. McQuay, Inc., Minneapolis, Minn.
Zig Zag—Heat exchangers. Stout & Sons, David, St. Louis, Mo.
Zinaloy—Zinc sheets. Matthiessen & Hegeler Zinc Co., La Salle, Ill.
ZINCGRIP—Sheets. Armco Steel Corp., Middletown, O.
Zincilate—Coatings. Industrial Metal Protectives, Inc., Dayton, O.
Zincoater—Coatings. Tropical Paint Co., Cleveland, O.
Zinc Soot—Soot destroyers. Tamms Industries Co., Chicago, Ill.
Zip Dyeline Inspector—Piping leak detectors. Zaco Laboratories, Cleveland, O.
Zip-On—Plastic tubing. Devices, Inc., A Div. of Miracle Adhesives Corp., Bellmore, N. Y.
Zipper—Welders. Mid-States Welder Mfg. Co., Chicago, Ill.
Zip-Portable—Welders. Mid-States Welder Mfg. Co., Chicago, Ill.
Zip Speed Lacquer—Identification markers. Zaco Laboratories, Cleveland, O.
Zircon—Furnace and refractory cement, refractories. Taylor Sons Co., Charles, Cincinnati, O.
Zone-A-Matic—Boilers. Edwards Engineering Corp., Pompton Plains, N. J.
Zone-Pac—Heating systems. Barber-Colman Co., Rockford, Ill.
Zonetrol—Systems. Acro Div., Robertshaw-Fulton Controls Co., Columbus, O.
Zytel—Plastics, powder and resins. duPont de Nemours & Co., E. I., Polychemicals Dept., Wilmington, Del.

DIRECTORY SECTION

HEATING, PIPING, AND AIR CONDITIONING EQUIPMENT FOR INDUSTRIAL AND ALL OTHER LARGE BUILDINGS

PART 4 — ALL MANUFACTURERS' ADDRESSES

A

A. & A. Register Co., 8327 Clinton Rd., Cleveland 9, O.
ABC-Federal Oil & Burner Co., Inc., 2210 Walnut St., Philadelphia 3.
ACEC Electric Corp., 40 E. 49th St., New York 17, N. Y.
A.C.M.I. Borescope Div., American Cystoscope Makers, Inc., 8 Pelham Parkway, Pelham Manor, N. Y.
A'G'A Div. of Elastic Stop Nut Corp. of America, 1027 Newark Ave., Elizabeth 3, N. J.
A-J Mfg. Co., 3601 E. 18th St., Kansas City 27, Mo.
A-P Controls Div., Controls Co. of America, 2450 N. 32nd St., Milwaukee 45, Wis.
A.R.A. Mfg. Co., 1041 Foch St., Ft. Worth, Tex.
Abart Gear & Machine Co., 4828-36 W. 16th St., Chicago 50, Ill.
Abbeon Supply Co., 179-15 Jamaica Ave., Jamaica 32, N. Y.
Abbott & Biddle Co., 2413 Federal St., Philadelphia 46, Pa.
Abbott Products, Inc., 150-50 Twelfth Ave., Whitestone 57, N. Y.
Able Metal Spinning & Stamping Co., 2009 Nameoke Ave., Far Rockaway 91, N. Y.
Accurate Sheet Metal & Mfg. Works, 2336-44 Milwaukee Ave., Chicago 47, Ill.
Accurate Specialties Co., Inc., 9-01 43rd Ave., Long Island City, N. Y.
Ace Engineering Co., 2850 W. Harrison, Chicago 12, Ill.
Ace Instrument Co., Inc., 172 Pacific St., Brooklyn, N. Y.
Ace-Sycamore, Inc., 448 DeKalb Ave., Sycamore, Ill.
Acer & Whedon, Inc., Medina, N. Y.
Aeheson Mfg. Co., Braddock P. O., Rankin, Pa.
Acker Corp., P. O. Box 3117, No. Sta. P. O., Meridian, Miss.
Ackerman Gas Boiler Corp., S. Main St., & P. R.R., McDonald, Pa.
Ackermann Mfg. Co., Wheeling, W. Va.
Acme Asbestos Covering & Flooring Co., 236 N. Elizabeth St., Chicago 7, Ill.
Acme Chemical Co., 2506 N. 32nd, Milwaukee 45, Wis.
Acme Electric Corp., Cuba, N. Y.
Acme Electric Heating Co., 1217 Washington St., Boston 18, Mass.
Acme Electric Welder Co., 2618 Fruitland Ave., Los Angeles 58, Calif.
Acme Engineering & Mfg. Corp., Box 1203, Muskogee, Okla.
Acme-Fisher Div., Broadway Rubber Corp., 529 E. Broadway, Louisville, Ky.
Acme Gauge & Instrument Co., Inc., 30 Main St., Brooklyn, N. Y.
Acme Industries, Inc., 600 N. Mechanic St., Jackson, Mich.
Acme Mfg. Co., 7500 State Rd., Philadelphia 36, Pa.
Acme Newport Steel Co., Ninth & Lowell Sts., Newport, Ky.
Acme Steel Co., 135th St. & Perry Ave., Chicago 27, Ill.
Acme Welding Div. of the United Tool & Die Co., 1031 New Britain Ave., West Hartford, Conn.
Acorn Refining Co., 8001 Franklin Ave., Cleveland, O.
Acro Div., Robertshaw-Fulton Controls Co., 2040 E. Main St., Columbus, O.
Acro Welder Mfg. Co., 1719 W. St. Paul Ave., Milwaukee 3, Wis.
Adam Electric Co., Frank, 3648 Windsor Pl., St. Louis 13, Mo.
Adams Co., The, E. 4th St., P. O. Box 268, Dubuque, Ia.
Adams Co., Inc., R. P., 468 Park Dr., Buffalo 17, N. Y.
Adams Mfg. Co., 1530 St. Clair Ave., Cleveland 14, O.
Adams Pipe Repair Products, 2453 Merced Ave., P. O. Box 111, El Monte, Calif.
Addison Products Co., Addison, Mich.
Adelta Mfg. Co., Inc., 21 & Ellsworth, Philadelphia 46, Pa.
Adhesive Products Corp., 1660 Boone Ave., New York 60, N. Y.
Adjustable Clamp Co., 417 N. Ashland Ave., Chicago 22, Ill.
Admiral Corp., 3800 Cortland St., Chicago 47, Ill.
Adre Co., The, 8980 Hawthorne Lane, Hales Corner 3, Wis.
Adsco Div., Yuba Consolidated Industries, Inc., 20 Milburn St., Buffalo 12, N. Y.
Advance Furnace Co., 2300 E. Douglas, Wichita 7, Kans.
Advance Industries, Inc., 640 Memorial Dr., Cambridge 39, Mass.
Advance Pump Co., 1201-5th St., Berkeley 10, Calif.
Advance Relays, Product of Electronics Div., Elgin National Watch Co., 366 Bluff City Blvd., Elgin, Ill.
Aemco Inc., 10 State St., Mankato, Minn.
Aerco Corp., Northvale, N. J.
Aerofin Corp., 101 Greenway Ave., Syracuse 3, N. Y.
Aeroil Products Company, Inc., 69 Wesley St., South Hackensack, N. J.
Aeroprojects, Inc., 310 E. Rosedale Ave., West Chester, Pa.
Aeroquip, Inc., 1225 W. Main St., Van Wert, O.
Aeroquip Corp., 300 S. East Ave., Jackson, Mich.
Aerotec Corp., The, Greenwich, Conn.
Aerotech Specialties, Inc., Glastonbury, Conn.
Aerovent Fan Co., Inc., Ash and Barlow Sts., Piqua, O.
Aetna Ball & Roller Bearing Co., Div. Parkersburg-Aetna Corp., 4600 W. Schubert, Chicago, Ill.
Afco Fitting Co., Div. of Curtis Mfg. Co., 11830 Brookpark Rd., Cleveland 30, O.
Agava Products, Inc., 34 Exchange Pl., Jersey City 2, N. J.
Aget Mfg. Co., 1408 E. Church St., Adrian, Mich.
Agnew & Tomlinson, 51-04 Vernon Blvd., Long Island City 1, N. Y.
Airaterra (Roylyn Products), 620 Paula Ave., Glendale 1, Calif.
Air-Con Filter Corp., 622-26 National St., Memphis 12, Tenn.
Air Conditioning Engineering Co., 44 First St., Cambridge 41, Mass.
Air Conditioning Equipment Corp., 219 E. 44th St., New York, N. Y.
Air Conditioning Products Co., 2340 W. Lafayette Blvd., Detroit 16.
Air Control Products, Inc., Coopersville, Mich.
Air Controls, Inc., Div. of Cleveland Heater Co., 2310 Superior Ave., Cleveland 14, O.
Air-Cooling Engineering Co., P. O. Box 744, Evanston, Ill.
Air Devices, Inc., 185 Madison Ave., New York 16, N. Y.
Air Distribution Products Co., 116 S. LaBrea Ave., Los Angeles 36.
Air-Factors, Inc., 1624 S. Raymond Ave., Monrovia, Calif.
Air Filter Corp., 4554 West Woolworth Ave., Milwaukee 18, Wis.
Air Heaters, Inc., 1004 Mahoning Bank Bldg., Youngstown, O.
Air-Loc Div., Clark, Cutler, McDermott Co., Franklin, Mass.
Air-Net Appliance Corp., 1340 E. 55th St., Chicago 15, Ill.
Air Reduction Sales Co., A Div. of Air Reduction Co., Inc., Socony-Mobil Bldg., 150 E. 42nd St., New York 17, N. Y.
Air & Refrigeration Corp., 439 Madison Ave., New York 22, N. Y.
Aireactor Corp., 271 Madison Ave., New York 16, N. Y.
Aire-Foile Fan & Blower Co., 10047 West Fort, Detroit 9, Mich.
Airetool Mfg. Co., Springfield, O.
Airfan Engineering Co., 7401 Telegraph Rd., Los Angeles 22, Calif.
Airfloor Co. of California, Inc., 13729 East Rosecrans Blvd., Norwalk, Calif.
Airgard Mfg. Co., 362 W. Erie St., Chicago 10, Ill.
Airguide Instrument Co., 2210 Wabansia Ave., Chicago 47, Ill.
Airjet Ventilator Co., 133 Industrias, San Clemente, Calif.
Airkem, Inc., 241 E. 44 St., New York 17, N. Y.
Airmaster Corp., 1801 W. Belle Plaine Ave., Chicago, Ill.
Airmatic Valve, Inc., 7317 Associate Ave., Cleveland 9, O.
Air-Maze Corp., 25000 Miles Rd., Cleveland 28, O.
Air-Path Products Co., 4620 Doll Ave., Baltimore 15, Md.
Air Products, Inc., 949 Hamilton St., Allentown, Pa.
Air Purification Service, Inc., 136 Liberty St., New York, N. Y.
Airserco Mfg. Co., Inc., 435 Melwood St., Pittsburgh 13, Pa.
Air-Stream Filter Corp., 2100 Washington Ave., St. Louis 3, Mo.
Airtemp Construction, Div. of Chrysler Corp., 1600 Webster, Dayton, O.
Airtex Corp., 2900 North Western Ave., Chicago 18, Ill.
Airtherm Mfg. Co., 711 S. Spring Ave., St. Louis 10, Mo.
Airtron Corp., Holland, O.
Airwasher Corp., Eaton Rapids, Mich.
Ajax Boiler & Heater Co., 1519 W. 132nd St., Gardena, Calif.
Ajax Flexible Coupling Co., Inc., Westfield, N. Y.
Akron Metallic Gasket Co., 155 N. Union, P. O. Box 911, Akron 9, O.
Alabama Pipe Co., Anniston, Ala.
Aladdin Heating Corp., 1111 West Ave., 137, San Leandro, Calif.
Alan Wood Steel Co., Conshohocken, Pa.
Albert Pipe Supply Co., Inc., 101 Varick Ave., Brooklyn 37, N. Y.
Albertson & Co., Inc., 3100 Lowell St., Sioux City 2, Ia.
Alco Products, Inc., Schenectady 5, N. Y.
Alco Refrigeration Sales & Service, Inc., 3952 St. Clair Ave., Cleveland, O.
Alco Valve Co., 865 Kingsland Ave., St. Louis 5, Mo.
Aldrich Co., 105 E. Williams St., Wyoming, Ill.
Aldrich Pump Co., 4 Pine St., Allentown, Pa.
Aljon Mfg. Co., Inc., 54-18 43rd St., Maspeth 78, N. Y.
Allan Distributors, 27-11 49th Ave., Long Island City, N. Y.
Allcraft Mfg. Co., Inc., 27 Hayward St., Cambridge, Mass.
Allegheny Ludlum Steel Corp., Oliver Bldg., Pittsburgh 22, Pa.
Allegheny Valve Co., 349 Pennsylvania Ave. W., Warren, Pa.
Allen-Bradley Co., 136 W. Greenfield Ave., Milwaukee 4, Wis.
Allen Co., Inc., L. B., 9307 Berenice, Schiller Park, Ill.
Allen Co., Robert G., P. O. Box 110, Mechanicsville, N. Y.
Allen Cooler & Ventilator, Inc., 704 Woodward, Rochester, Mich.
Allen Mfg. Co., W. D., 650 South 25th Ave., Bellwood, Ill.
Alliance Mfg. Co., Inc., Alliance, O.
Allied Control Co., Inc., 2 East End Ave., New York 21, N. Y.
Allied Porcenell, Inc., 6641 S. Narragansett Ave., Chicago 38, Ill.
Allied Weld-Craft, Inc., 401 W. South St., Indianapolis 25, Ind.
Allin Mfg. Co., 410 N. Hermitage Ave., Chicago, Ill.
Allington & Curtis Mfg. Co., 1800 Holland Ave., Saginaw, Mich.
Allis-Chalmers Mfg. Co., 1171 S. 70th St., Milwaukee 1, Wis.
Allis Co., Louis, The, 427 E. Stewart St., Milwaukee 1, Wis.
Allison-Campbell Div. of American Chain & Cable Co., Inc., 924 Connecticut Ave., Bridgeport 2, Conn.
Allmetal Screw Products Co., Inc., 821 Stewart Ave., Garden City, Long Island, N. Y.
Alloy Propeller, Zelienople, Pa.
Alloy Rods Co., Lincoln Highway West, York, Pa.
Alloy Stainless Products Co., Union Blvd., Totowa, N. J.
Alloy Steel Products Co., 1322 W. Elizabeth Ave., Linden, N. J.

Allpax Co., Inc., Mamaroneck, N. Y.
All-State Welding Alloys Co., Inc., White Plains, N. Y.
Almar Hydraulic Valve Co., 10011 Meech Ave., Cleveland 5, O.
Alpha Metals, Inc., 56 Water St., Jersey City 4, N. J.
Alpha Plastics, Inc., 78 Okner Pkwy., Livingston, N.J.
Alphil Spot Welder Mfg. Corp., 1058 Pacific St., Brooklyn, N. Y.
Alstrom Corp., The, 790 E. 176 St., New York 60, N. Y.
Alter Co., Harry, 1717 S. Wabash Ave., Chicago, Ill.
Alton Mfg. Co., 1112 Ross Ave., Dallas 2, Tex.
Aluminum Co. of America, 1501 Alcoa Bldg., Pittsburgh 19, Pa.
Aluminum Products, Inc., Fort Lauderdale, Fla.
Aluminum Wool Div., Carey Electronic Engineering Co., 1880 Clifton Ave., Springfield, O.
Alumiseal Corp., 429 E. 53rd St., New York 22, N. Y.
Amana Refrigeration, Inc., Amana, Ia.
Amchem Products, Inc., Brookside Ave., Ambler, Pa.
Amco Plastic Pipe Co., 2002 Davis St., San Leandro, Calif.
Amercoat Corp., 4809 Firestone Blvd., South Gate, Calif.
American Agile Corp., P. O. Box 168, Bedford, O.
American Air Curtain Corp., 10408 Manchester Rd., St. Louis 22, Mo.
American Air Filter Co., Inc., 215 Central Ave., Louisville 8, Ky.
American Boa, Inc., 114 Liberty St., New York, N.Y.
American Blow Pipe Co., 3549 W. Cermak Rd., Chicago 23, Ill.
American Blower Div. of American-Standard, Detroit 32, Mich.
American Brass Co., 414 Meadow St., Waterbury 20, Conn.
American Car & Foundry Div. of ACF Industries, Inc., 750 Third Ave., New York 17, N. Y.
American Cast Iron Pipe Co., 2930 N. 16th St., Birmingham 2, Ala.
American Coal Burner and Wood Stoker Corp., 1133 W. Cornelia Ave., Chicago 13, Ill.
American Coils Co., Route 524, Lakewood Rd., Farmingdale, N. J.
American Comfort Mfg. Co., 2401 Main St., Evanston, Ill.
American Coolair Corp., 3604 Mayflower St., P. O. Box 2300, Jacksonville 3, Fla.
American Cooling Tower Co., 2710 McGee St., Kansas City 8, Mo.
American District Telegraph Co., 155 Sixth Ave., New York, N. Y.
American Engineering Co., Wheatsheaf Lane & Sepviva St., Philadelphia 37, Pa.
American Felt Co., Glenville, Conn.
American Flange & Mfg. Co., Inc., 30 Rockefeller Plaza, New York 20.
American Flow Control Corp., 2220 South Blvd., Houston, Tex.
American Foundry & Furnace Co., Washington St. at McClun, Bloomington, Ill.
American Furnace Co., 1300 Hampton Ave., St. Louis 10, Mo.
American Gas & Chemicals, Inc., Leak-Tec Div., 120 East End Ave., New York 28, N. Y.
American Gilsonite Co., 134 W. Broadway, Salt Lake City 1, Utah
American Hair & Felt Co., Room 322, Merchandise Mart, Chicago 54.
American Hard Rubber Co., Div. of Amerace Corp., Ace Rd., Butler, N. J.
American Hydrotherm Corp., 10-55 Jackson Ave., Long Island City 1.
American Hydrovac, Div. Pitz Foundry Inc., 290 Scholes St., Brooklyn 6, N. Y.
American Instrument Co., Inc., 8030 Georgia Ave., Silver Spring, Md.
American K. A. T. Corp., Subsidiary of Magnus Chemical Co., Inc., Garwood, N. J.
American Ladder & Scaffold Co., Inc., 5503 N. W. 7th Ave., Miami 38, Fla.
American Machine Products Co., 208½ S. 2nd Ave., Marshalltown, Ia.
American Machine Wks., Inc., 1320 Clark St., Racine, Wis.
American Manganese Bronze Co., Rhawn & Hegerman Sts., Philadelphia, Pa.
American-Marsh Pumps, Inc., 60 Capital Ave., N. E., Battle Creek, Mich.
American Metal Hose Div., American Brass Co., The, P. O. Box 791, Waterbury 20, Conn.
American Metal Works, Inc., P. O. Box 7027, New Orleans, La.
American Meter Co., Inc., 13500 Philmont Ave., Philadelphia 16, Pa.
American Moistening Co., Cleveland, N. C.
American Molding Co., 355 Fremont St., San Francisco, Calif.
American Photocopy Equipment Co., 1920 W. Peterson Ave., Chicago 26, Ill.
American Pipe Bending Machine Co., Inc., 17 Furnace St., Poultney, Vt.
American Pipe & Steel Corp., 2201 W. Commonwealth Ave., Alhambra, Calif.
American Pipe Tool Co., 4856 W. Kinzie St., Chicago 44, Ill.
American Platinum & Silver Div., Engelhard Industries, Inc., 231 New Jersey Railroad Ave., Newark, N. J.
American Potash & Chemical Corp., Aerosol & Refrigeration Div., 3000 W. 6th St., Los Angeles, Calif.
American Pulley Co., The, 4200 Wissahickon Ave., Philadelphia 29.
American Radiator & Standard Sanitary Corp., 40 West 40th St., New York 18, N. Y.
American Sand-Banum Co., Inc., 1 N. Merrick Ave., Merrick, N. Y.
American Sanitary Mfg. Co., 308 Latimer St., Abingdon, Ill.
American Screw Co., Willimantic, Conn.
American Sealants Co., 103 Woodbine St., Hartford 6, Conn.
American Silver Co., 36-07 Prince St., Flushing 54, N. Y.
American Smelting & Refining Co., Federated Metals Div., 120 Broadway, New York 5, N. Y.
American Solder & Flux Co., 19th and Willard Sts., Philadelphia 40, Pa.
American-Standard, Air Conditioning Div., 40 W. 40th St., New York.
American-Standard, Ross Heat Exchanger Div., Box 2081, Buffalo 5, N. Y.
American Steel Band Co., P. O. Box 565, Pittsburgh, Pa.
American Steel & Wire Div., United States Steel, Rockefeller Bldg., Cleveland 13, O.
American Tube Products, Inc., 100 Pulaski St., West Warwick, R. I.
American Viscose Corp., 350 5th Ave., New York, N. Y.
American Vitrified Products Co., 700 National City Bank Bldg., Cleveland 10, O.
American Warming & Ventilating Co., 1017-1021 Summit St., Toledo 4, O.
American Water Softener Co., Lehigh Ave. and 4th St., Philadelphia 33, Pa.
American Wells Wks., 100 N. Broadway, Aurora, Ill.
American Zinc Products Div., Ball Brothers Co., Greencastle, Ind.
Ames Iron Works, Inc., Oswego, N. Y.
Amic Mfg. Corp., 21-25 44th Ave., Long Island City, N. Y.
Aminco Refrigeration Products, American Injector Co., 1000 E. McNichols, Detroit 3, Mich.
Ammco Tools, Inc., 2100 Commonwealth Ave., North Chicago, Ill.
Ammerman Co., Inc., Stillwater, Minn.
Ammo Products, Inc., 1100 20th St., N. W., Washington, D. C.
Ampco Metal, Inc., 1731 S. 38th St., Milwaukee 46, Wis.
Ampere Industries, 60 Boston St., Newark 3, N. J.
Ampion Corp., 4-88 47th Ave., Long Island City 1, N. Y.
Analytical Measurements, Inc., 585 Main St., Chatham, N. J.
Anchor Coupling Co., Inc., 342 N. 4th., Libertyville, Ill.
Anchor Div., Stratton & Terstegge Co., Inc., P. O. Box 311, New Albany, Ind.
Anchor Metal Co., Inc., 966 Meeker Ave., Brooklyn, N. Y.
Anchor Packing Co., 401 N. Broad St., Philadelphia 8, Pa.
Andale Co., 1740 Cherry St., Philadelphia 3, Pa.
Anders Lykens Corp., Div. of Milton Roy Co., 1371 E. Mermaid Lane, Philadelphia 18, Pa.
Andersen Corp., Bayport, Minn.
Anderson Co., V. D., The, Div. of International Basic Economy Corp., 1949 W. 96th St., Cleveland 2, O.
Anderson Brass Co., 100 S. Campbell, Detroit 9, Mich.
Anderson Chemical Co., Inc., 1620 Waterville Rd., Macon, Ga.
Anderson Deisel Engine Co., 6245 State Rd., Philadelphia 35, Pa.
Anderson Metals Corp., Twenty-Second & Harrison Sts., Kansas City 8, Mo.
Anderson-Prichard Oil Corp., Liberty Bank Bldg., Oklahoma City 2, Okla.
Anderson Products, Inc., 17 Tudor St., Cambridge 39, Mass.
Anderson-Snow Corp., 3863 N. Milwaukee Ave., Chicago 41, Ill.
Anderson-Stolz Corp., 1731 Walnut St., Kansas City 8, Mo.
Andrew Parts Mfg. Co., 32-70 31st St., Long Island City 6, N. Y.
Andrew Technical Supply Co., 7068 N. Clark St., Chicago, Ill.
Anemostat Corp. of America, 10 E. 39th St., New York 16, N. Y.
Anesite Co., 3575 Touhy Ave., Lincolnwood, Chicago 45, Ill.
Anetsberger Bros., Inc., Northbrook, Ill.
Angier Adhesives, Div. of Interchemical Corp., 120 Potter St., Cambridge, Mass.
Ansul Chemical Co., Refrigeration Div., Marinette, Wis.
Anthony Co., End of Baker, Streator, Ill.
Anti-Corrosive Metal Products Co., Inc., Castleton-On-Hudson, N. Y.
Anti-Friction Bearings Co., 6433 Foster Bridge Rd., Bell Gardens, Calif.
Apex Reinforced Plastics, Washington & Elm Sts., Cleveland 13, O.
Applied Mechanics Co., 381 Congress St., Boston 10, Mass.
April Showers Co., Inc., 4126 Eighth St., N. W., Washington 11, D. C.
Aqua Electric Scale Control, Inc., 2026 E. 22nd St., Cleveland 15, O.
Aqua Matic, Inc., 2412 Grant, Rockford, Ill.
Aquatrol Ferr-X Corp., Clifton, N. J.
Aquatrol Laboratories, Inc., Clifton, N. J.
Arabol Mfg. Co., 110 E. 42nd St., New York 17, N. Y.
Arbest Mfg. Co., 3047 Amber St., Philadelphia 34, Pa.
Arcee Products, Pawtucket, R. I.
Arco Co., The, 7301 Bessemer Ave., Cleveland 27, O.
Arco Mfg. Corp., 542 West 55th St., New York 19, N. Y.
Arco Products, Automotive Rubber Co., 12550 Beech Rd., Detroit, Mich.
Arcos Corp., 1500 S. 50th St., Philadelphia 43, Pa.
Arden Airoflo Engineering, Inc., 2207 N. Chico Ave., El Monte, Calif.
Arens Controls, Inc., 2017 Greenleaf St., Evanston, Ill.
Arex Co., 612 N. Michigan Ave., Chicago 11, Ill.
Argo Industries, Inc., 524 Wethersfield Ave., Hartford, Conn.
Argo Plastic Products, 1400 West Tenth St., Cleveland 13, O.
Arjac Products Inc., 55-59 Halstead St., Rochester 10, N. Y.
Arkla Air Conditioning Corp., Shannon Bldg., Little Rock, Ark.
Arkos Mfg. Co., 7310 Woodward Ave., Detroit 2, Mich.
Armco Drainage & Metal Products, Inc., Welded Pipe Sales Div., Middletown, O.
Armco Steel Corp., 703 Curtis St., Middletown, Ohio.
Armite Laboratories, 6609 Broad St., Los Angeles 1, Calif.
Armour and Co., Ammonia Div., 1355 W. 31st St., Chicago 9, Ill.
Armstrong-Bridgeport Tool Mfg. Corp., 357-363 Cortlandt St., Belleville, N. J.
Armstrong Bros. Tool Co., 5200-5300 W. Armstrong Ave., Chicago 46.
Armstrong Co., Richard M., Box 188, West Chester, Pa.
Armstrong Cork Co., West Liberty St., Lancaster, Pa.
Armstrong Fittings Co., P. O. Box 1356, Des Moines, Ia.
Armstrong Furnace Co., Div. of National Union Electric Corp., 851 W. 3rd Ave., Columbus, O.
Armstrong Machine Wks., 874 Maple St., Three Rivers, Mich.
Arno Adhesive Tapes, Inc., 4100 Ohio St., Michigan City, Ind.
Aronson Machine Co., P. O. Box 266, Arcade, N. Y.
Arro Expansion Bolt Co., N. Boone Ave., Marion, O.
Arrow-Hart & Hegeman Elec. Co., 103 Hawthorne St., Hartford 6, Conn.
Arrowhead Products, Div. of Federal-Mogul-Bower Bearings, Inc., 2300 Curry St., Long Beach, Calif.
Art Valve Co., 4662 N. Lincoln Ave., Chicago 25, Ill.
Asbestos Asphalt Insulation Co., 2100 W. Fullerton Ave., Chicago 47.
Ashburn Supply Co., 8468 Warner Dr., Culver City, Calif.

Ashcraft Co., J. P., 5643 Dyer St.. Dallas 6, Tex.
Askania Regulator Co., 240 E. Ontario St., Chicago 11, Ill.
Assembly Products, Inc., Chesterland 1, O.
Associated Mills, Inc., 303 W. Monroe St., Chicago 6, Ill.
Associated Plastic Co's., Inc., Midland, Mich.
Associated Valve & Engineering Co., 337 W. Walnut St., North Wales, Pa.
Aston Products, Inc., 22804 Dequindre, Warren, Mich.
Atcor, Inc., 24422 Ryan Rd., Warren, Mich.
Atkins Saw Div., Borg-Warner Corp., 402 S. Illinois St., Indianapolis 9, Ind.
Atkomatic Valve Co., Inc., 545 W. Abbott St., Indianapolis 25, Ind.
Atlantic Engravers, Inc., 232 Ocean Ave., Amityville, N. Y.
Atlantic Metal Hose Co., Inc., 308 Dyckman St., New York 34, N. Y.
Atlantic Pipe Bending & Fabricating Corp., Anderson Ave., Moonachie, N. J.
Atlantic Steel Boiler Co., S. E. Cor. 22nd & Washington Ave., Philadelphia 46, Pa.
Atlantic Steel Co., P. O. Box 1714, Atlanta 1, Ga.
Atlas Copco Eastern, Inc., 610 Industrial Ave., Paramus, N. J.
Atlas Industries, Inc., P. O. Box 8152, Houston, Tex.
Atlas Mfg. Co., Eustis at Robbins St., St. Paul 14, Minn.
Atlas Mineral Products Co., 181 Walnut St., Mertztown, Pa.
Atlas Valve Co., 282 South St.. Newark, N. J.
Atlas Welding Accessories, Inc., 707 E. Lewiston Ave., Ferndale 20, Mich.
Atmos Corp., 1215 West Fullerton Ave., Chicago 14, Ill.
Auburn Burner Co., Lock Box 269, Auburn, Ind.
Auburn Burner Co., Edgerton, O.
Auburn Foundry Inc., Heating Div., Auburn, Ind.
Auburn Machine Works, Inc., Auburn, Neb.
Auburn Sparkplug Co., Inc., Auburn, N. Y.
Auer Register Co., 6600 Clement Ave., Cleveland 5, O.
Aurora Pump Div., The New York Air Brake Co., 619 Loucks St., Aurora, Ill.
Austin Engineering & Mfg. Co., Inc., Roseway Dr., Ysleta (El Paso County), Texas
Au-Temp-Co Corp., 657 Broadway, New York 12, N. Y.
Auto-Control Laboratories, Inc., 333 So. Hindry Ave., Inglewood 1, Calif.
Autoclave Engineers Sales Corp., 2930 W. 22nd St., Erie, Pa.
Automatic Burner Corp., 1823 W. Carroll Ave., Chicago 12, Ill.
Automatic Control Co., 995 University Ave., St. Paul 4, Minn.
Automatic Corp., 4417 Oleatha Ave., St. Louis 16, Mo.
Automatic Devices Co., Inc., 714 Hillgrove Ave., Western Springs, Ill.
Automatic Motor Base Co., Windsor, N. J.
Automatic Solid Fuels Equipment Inc., 901 N. Pennsylvania, Indianapolis, Ind.
Automatic Switch Co., Florham Park, N. J.
Automatic Timing & Controls, Inc., King of Prussia, Pa.
Automotive Rubber Co., Inc., 12550 Beech Rd., Detroit 39, Mich.
Autostributor Co., 226 Leslie St., Lansing 12, Mich.
Avon Tube Div., Higbie Mfg. Co., Ewing Rd., Rochester, Mich.
Axeman-Anderson Co., Williamsport, Pa.

B

B-G Engineering Co., 5321 Long St., Houston, Tex.
Babbitt Chemical Co., Inc., 36 Prospect St., New Bedford, Mass.
Babbitt Steam Specialty Co., 1 Babbitt Sq., New Bedford, Mass.
Babcock & Wilcox Co., The, Boiler Div., 161 E. 42nd St., New York 17, N. Y.
Babcock & Wilcox Co., The, Tubular Products Div., Beaver Falls, Pa.
Bacharach Industrial Instrument Co., 200 North Braddock Ave., Pittsburgh 8.
Badger Fire Extinguisher Co., Chase St., Methuen, Mass.
Badger Mfg. Co., 230 Bent St., Cambridge 41, Mass.
Badger Sales Co., Inc., 2251 W. Pico Blvd., Los Angeles 6, Calif.
Badham Insulation Co., Inc., 1909 — 1st Ave. S., Birmingham, Ala.
Bahnson Co., 1001 S. Marshall St., Winston-Salem 1, N. C.
Bailey Co., Chas. M., 667 Folsom St., San Francisco 7, Calif.
Bailey Meter Co., 1050 Ivanhoe Rd., Cleveland 10, O.
Baker Co., Inc., The, 106 Granite St., Biddeford, Me.
Baker, Inc., C. I., 1205 Colorado Ave., Lorain, O.
Baker & Co., R. H., 2244 East 37 St., Los Angeles 58, Calif.
Baker Mfg. Co., Wichita Falls, Tex.
Bal-Air, Inc., 1210 McGavock St., Nashville, Tenn.
Baldor Electric Co., 4353 Duncan Ave., St. Louis 10, Mo.
Baldwin-Hill Co., 500 Breunig Ave., Trenton 2, N. J.
Baldwin Ward Mfg. Co., 1630 S. Main, Ottawa, Ks.
Balteau Electric Corp., New & Meadow Sts., Stamford, Conn.
Baltimore Aircoil Co., Inc., P. O. Box 7322, Baltimore 3, Md.
Band-It Co., 48th and Dahlia, Denver 16, Colo.
Banister Co., Inc., 23 Charles St., Cambridge 41, Mass.
Barber-Colman Co., 1701 Rock St., Rockford, Ill.
Barber Mfg. Co., 1058 E. 134th St., Cleveland 10, O.
Bar-Brook Mfg. Co., Inc., 6133 Linwood Ave., Shreveport, La.
Barclay, Inc., Robert, 1234 W. Fulton St., Chicago 7, Ill.
Barco Mfg. Co., 500 Hough St., Barrington, Ill.
Bard Mfg. Co., Bryan, O.
Barkow Mfg. Co., Inc., Aug. G., 2230 South 43rd St., Milwaukee 46.
Barksdale Valves, 5125 Alcoa Ave., Los Angeles 58, Calif.
Barnebey-Cheney Co., Cassady at East 8th Ave., Columbus 19, O.
Barnes & Jones, Inc., 34 Crafts St., Newtonville, Mass.
Barnes Manufacturing Co., Mansfield, O.
Barnes Tool Co., The, 152 Brewery St., New Haven 6, Conn.
Barnstead Still & Fertilizer Co., Lanesville Terrace, Boston 31, Mass.
Barreled Sunlight Paint Co., 43 Dudley St., Providence 1, R. I.
Barrett Div., Allied Chemical & Dye Corp., 40 Rector St., New York 6, N. Y.
Barrett Haentjens & Co., Hazleton, Pa.
Barrows Porcelain Enamel Corp., Langdon Farm Rd. & Pa. R. R., Cincinnati, O.
Barry Blower Co., 3100 California St., N.E., Minneapolis, Minn.
Barry Controls, Inc., 765 Pleasant St., Watertown 72, Mass.
Bart Mfg. Corp., 227 Main St., Belleville 9, N. J.
Barth Engineering & Mfg. Co., Inc., Milldale, Conn.
Bartlett Mfg. Co., 3003 E. Grand Blvd., Detroit 2, Mich.
Barton Instrument Corp., 580 Monterey Pass Rd., Monterey Park, Calif.
Barwick Mfg. Corp., 317 E. 18th, Wichita, Kan.
Barworth, Inc., 681 Morris Turnpike, Springfield, N. J.
Baseline Mfg. Corp. of Fla., 3335 - 22nd Avenue So., St. Petersburg 12, Fla.
Baseline Mfg. Co., 2701 E. 78th St., Minneapolis, Minn.
Basford Co., H. R., 235 15th St., San Francisco, Calif.
Basic Engineers, Inc., 1007 Main St., Sharpsburg 15, Pa.
Basic Inc., 845 Hanna Bldg., Cleveland 15, O.
Baso Inc., P. O. Box 461, Milwaukee, Wis.
Bastian-Morley Co., Inc., LaPorte, Ind.
Bate Soot Blower Div., General Blower Co., Inc., 6412 Girard Ave., Philadelphia 31, Pa.
Bath Co., Cyril, The, 32400 Aurora Rd., Solon, O.
Bausch & Lomb Optical Co., 633 St. Paul St., Rochester 2, N. Y.
Bayer Co., 4030 Chouteau Ave., St. Louis 10, Mo.
Bayley Blower Co., 6600 W. Burnham St., Milwaukee 14, Wis.
Beach-Russ Co., 420 Lexington St., New York 17, N. Y.
Beacon Brass Co., 2 Jackson, Waltham, Mass.
Beacon-Morris Corp., 60 Brainerd Rd., Allston, Boston 34, Mass.
Beaird Co., J. B., 6200 St. Vincent Ave., Shreveport, La.
Bear Mfg. Co., Industrial Div., 2030 5th Ave., Rock Island, Ill.
Bearing Co. of America, Div. of Federal-Mogul-Bower Bearings, Inc., 501 Harrisburg Ave., Lancaster, Pa.
Beaton & Cadwell Mfg. Co., 185 Main St., New Britain, Conn.
Beaton & Corbin Mfg. Co., Southington, Conn.
Beaver Advance Corp., Ellwood City, Pa.
Beaver Pipe Tools, Inc., 310 Dana Ave., Warren, O.
Becher Pump Co., 3067 N. Elston, Chicago 18, Ill.
Beckett & Co., Inc., Thomas, 2521 Willowbrook Rd., P. O. Box 13,245, Dallas 9, Tex.
Beckett Corp., R. W., Elyria, O.
Beckley Perforating Co., 301 North Ave., Garwood, N. J.
Beckman & Whitley, Inc., 973 San Carlos Ave., San Carlos, Calif.
Belco Industrial Equipment Div., Bogue Electric Mfg. Co., 100 Pennsylvania Ave., Paterson 3, N. J.
Belco Industries, Inc., 316 South 16th St., St. Louis 3, Mo.
Bell & Gossett Co., 8200 N. Austin Ave., Morton Grove, Ill.
Bell Machine Specialties, 4813 Tremont Ave., Trevose, Pa.
BelloFram Corp., Blanchard Rd., Burlington, Mass.
Belmont Packing & Rubber Co., The, Butler & Sepviva Sts., Philadelphia 37, Pa.
Belmont Smelting & Refining Wks., Inc., 349 Belmont Ave., Brooklyn 7, N. Y.
Beltran Associates, Inc., 1133 East 35th St., Brooklyn 10, N. Y.
Bemco. Inc., 11631 Vanowen St., North Hollywood, Calif.
Bemis Bro. Bag Co., 408 Pine St., Box 111, St. Louis 2, Mo.
Bendix Aviation Corp., 3130 Wasson Rd., Cincinnati 8, O.
Bendix Filter Div., Bendix Aviation Corp., 434 W. 12 Mile Rd., Madison Heights, Mich.
Bendix-Westinghouse Automotive Air Brake Co., 950 E. Virginia St., Evansville, Ind.
Benjamin Air Rifle Co., 1527 S. 8th St., St. Louis 4, Mo.
Benjamin Electric Mfg. Co., Des Plaines, Ill.
Benson Co., Inc., Alex. R., Middlesettlement Rd., New Hartford, N. Y.
Bergen Pipesupport Corp., 50 Church St., New York 7, N. Y.
Berger Bros. Co., 229-237 Arch St., Philadelphia 6, Pa.
Berkeley Pump Co., P. O. Box 7, Station A, Berkeley 2, Calif.
Berko Electric Mfg. Co., 212-40 Jamaica Ave., Queens Village 28, N. Y.
Berna Co., A. J., 15251 Twelve Mile Rd., Roseville, Mich.
Berna Corp., Garwood, N. J.
Bernard-Franklin Co., Inc., 3126 E. Hedley St., Philadelphia 37, Pa.
Bernstrom, Inc., C. R., 183 Hartford Ave., Providence, R. I.
Bernz Co., Otto, Driving Park & Ramona, Rochester 13, N. Y.
Berry-Hill Corp., Hill Diesel Engine Div., 1 Washington Ave., Providence, R. I.
Bertram Co., Harvey P., The, 2225 Bogen St., Cincinnati 22, O.
Bertsch & Co., Inc., Church St., Cambridge City, Ind.
Besser Furnace and Air Conditioning Corp., 754 Clement Ave., Charlotte, N. C.
Best Combustion Equipment Co., Inc., W. N., 415 11th St., Carlstadt, N. J.
Bestt Rollr Co., 160 S. Brooke St., Fond du Lac, Wis.
Bete Fog Nozzle Inc., 309 Wells St., Greenfield, Mass.
Bethlehem Foundry & Machine Co., Bethlehem, Pa.
Bethlehem Steel Co., Bethlehem, Pa.
Better Engineered Controls, 1822 S. Burlington Ave., Los Angeles 6.
Beverly Shear Mfg. Co., 3019 W. 111th St., Chicago 43, Ill.
Bica Co., 1170 N. State St., Girard, O.
Biersach & Niedermeyer Co., 1937 N. Hubbard St., Milwaukee 12.
Bigelow Co., The, 174 River St., New Haven 3, Conn.
Bigelow Liptak Corp., 13300 Puritan Ave., Detroit 27, Mich.
Biggs Boiler Wks. Co., The, 1007 Bank St., E. Akron 5, O.
Bignall & Keeler Div., John Ramming Machine Co., 4591 McRee Ave., St. Louis 10, Mo.
Bil-Jax, Inc., Archbold, O.

Billings & Spencer Co., 1 Laurel St., Hartford 1, Conn.
Binks Mfg. Co., 3114-40 Carroll Ave., Chicago 12, Ill.
Birchfield Boiler, Inc., 2503 E. 11th St., Tacoma 1, Wash.
Bird-Archer Co., 4337 North American St., Philadelphia 40, Pa.
Birks Mfg. Co., 811 Hanover Rd., Meriden, Conn.
Bishop & Babcock Mfg. Co., 4901 Hamilton Ave., Cleveland 14, O.
Bishopric Products Co., 4413 Este Ave., Cincinnati 32, O.
Bituminous Coal Institute, Southern Bldg., Washington 5, D. C.
Black & Decker Mfg. Co., The, 628 Pennsylvania Ave., Towson 4, Md.
Black Mfg. Co., The, 403 Penn St., Baltimore 30, Md.
Black, Sivalls & Bryson, Inc., 7500 E. 12th St., Kansas City 26, Mo.
Black & White Chemical Co., 130 Walnut Ave., New York 54, N. Y.
Blackhawk Mfg. Co., 5325 W. Rogers St., Milwaukee 46, Wis.
Blackmer Pump Co., 1809 Century Ave., S. W., Grand Rapids 9, Mich.
Blaw Knox Co., Buflovak Equipment Div., 50 Winchester Ave., Buffalo 11, N. Y.
Blaw Knox Co., Power Piping and Sprinkler Div., 829 Beaver Ave., Pittsburgh 33, Pa.
Blazer & Son, M., 173 Market St., Passaic, N. J.
Blissfield Mfg. Co., Blissfield, Mich.
Blood Brothers Machine Div., Rockwell Spring and Axle Co., Allegan, Mich.
Blossom Mfg. Co., Inc., 2337 McDonald Ave., Brooklyn 23, N. Y.
Blower Application Co., 3361 N. 35th St., Milwaukee 16, Wis.
Blue Ridge Talc Co., Inc., Henry, Va.
Blue Seal Chemical Co., 177 Westfield Ave., W., Roselle Park, N. J.
Bluffton Electric Co., Bluffton, Ind.
Bock Corp., 110 S. Dickinson St., Madison, Wis.
Bodine Electric Co., 2500 W. Bradley Place, Chicago 18, Ill.
Bohn Aluminum & Brass Corp., 1400 Lafayette Bldg., Detroit, Mich.
Bohn Aluminum & Brass Corp., Betz Div., Danville, Ill.
Boiler Engineering & Supply Co., Manavon St., Phoenixville, Pa.
Boiler Equipment Trust, Amherst, Mass.
Bolta Products, A Div. of General Tire & Rubber Co., Lawrence, Mass.
Bonney Forge & Tool Wks., Cedar & Meadow Sts., Allentown, Pa.
Borden Co., The, Chemical Div., Coatings & Adhesives Div., Lincoln Blvd., Middlesex, N. J.
Bordo Co., Inc., L. J., 106 N. Keswick Ave., Glenside, Pa.
Borg-Warner Mechanical Seals, Div. of Borg-Warner Corp., P. O. Box 2017A, Terminal Annex, Los Angeles 54, Calif.
Borm Mfg. Co., 23 N. Union St., Elgin, Ill.
Bostich Co., East Greenwich, R. I.
Boston Gear Works, Quincy 71, Mass.
Boston Machine Works Co., 7 Willow St., Lynn, Mass.
Boston Woven Hose & Rubber Co., Div. of American Biltrite Rubber Co., 29 Hampshire St., Cambridge, Mass.
Botfield Refractories Co., Swanson & Clymer Sts., Philadelphia 47, Pa.
Bound Brook Oil-less Bearing Co., Bound Brook, N. J.
Bowen Engineering, Inc., North Branch, N. J.
Bowerston Shale Co., The, P.O. Box 2, Bowerston, O.
Bowman Co., Inc., D. F., P. O. Box 449, Clearwater, Fla.
Boylston Steam Specialty Co., 116-122 W. Illinois St., Chicago, Ill.
Brabender Corp., Rochelle Park, N. J.
Brady Co., W. H., 727 W. Glendale Ave., Milwaukee 9, Wis.
Brandt & Co., Inc., Eugene J., 50-20 25th St., Long Island City 1, N. Y.
Brass & Copper Imports, Inc., 4410 W. Lake Harriet Blvd., Minneapolis, Minn.
Breeze Corporations, Inc., Union, N. J.
Breidert Co., G. C., P. O. Box 1190, San Fernando, Calif.
Bremil Mfg. Co., 1020 Holland St., Erie, Pa.
Bressler Engineering Service, Oregon, Ill.
Bridgeport Brass Co., 30 Grand St., Bridgeport 2, Conn.
Bridgeport Thermostat Div., Robertshaw-Fulton Controls Co., 155 Hill St., Milford, Conn.
Brisk Metal Products, 103 Park Ave., New York 17, N. Y.
Bristol Co., The, P. O. Box 1790, Dept. HPAC, Waterbury, Conn.
Broad Crane & Engineering Service Co., 779 S. Dumfries, Detroit 17, Mich.
Broan Mfg. Co., Inc., P. O. Box 140, Hartford, Wis.
Bronson Fan Mfg. Corp., 4560 Worth St., Los Angeles, Calif.
Bronze Bearings, Inc., 340 North Ave., Cranford, N. J.
Brook Motor Corp., 3553 W. Peterson Ave., Chicago 45, Ill.
Brooke Engineering Co., Inc., 4517 Wayne Ave., Philadelphia 44, Pa.
Brookfield Engineering Laboratories, Inc., 240 Cushing St., Stoughton, Mass.
Brooklyn Paint & Varnish Co., Inc., 50 Jay St., Brooklyn 1, N. Y.
Brooks Equipment Corp., 217 Hudson St., Hoboken, N. J.
Brooks Rotameter Co., P. O. Box 432, Lansdale, Pa.
Brookside Corp., McCordsville, Ind.
Bros Inc., 1057 10th Ave., S. E., Minneapolis 14.
Brown Co., 150 Causeway St., Boston 14, Mass.
Brown-Brockmeyer Co., Inc., P. O. Box 989, Dayton 1, O.
Brown-Electro Co., 17 N. Dewey, Oklahoma City 2, Okla.
Brown Fintube Co., Elyria, O.
Brown Products Corp., 1090 Springfield Road, Union, N.J.
Browning Mfg. Co., 1940 Browning Blvd., Maysville, Ky.
Brundage Co., The, 503 N. Park St., Kalamazoo 11, Mich.
Bruner Corp., 4763 N. 32nd St., Milwaukee, Wis.
Bruning Co., Inc., Charles, 4700 Montrose Ave., Chicago 41, Ill.
Brunner Co., The, Subsidiary of Dunham-Bush, Inc., Rt. 129, Athens Rd., Gainesville, Ga.
Brunner Div. of Dunham-Bush, Inc., 179 South St., West Hartford, Conn.
Bryan Steam Corp., P. O. Box 337, Peru, Ind.
Bryant Mfg. Co., 2020 Montcalm St., Indianapolis, Ind.
BTU Industries, Inc., 158 S. Van Brunt St., Englewood, N. J.
Bubar Dust Systems, Old Lyme, Conn.
Buck Mfg. Co., 1355 North Tenth St., San Jose, Calif.
Buckeye Furnace Pipe Co., The, 897 Ingleside, Columbus 8, O.
Buckeye Tools Corp., 5070 Springboro Pike, Dayton, O.
Buda Div., The, Allis-Chalmers Mfg. Co., Harvey, Ill.
Budlew Products Co., 3535 W. Cortland, Chicago, Ill.
Buell Engineering Co., Inc., 123 Williams St., New York 38, N. Y.
Buensod-Stacey, Inc., 45 W. 18th St., New York 11, N. Y.
Buffalo Bolt Co., Div. of Buffalo-Eclipse Corp., North Tonawanda, N. Y.
Buffalo Forge Co., 171 Mortimer St., Buffalo 5, N. Y.
Buffalo Meter Co., 2917 Main St., Buffalo 14, N. Y.
Buffalo Pumps, Div. of Buffalo Forge Co., 171 Mortimer St., Buffalo 5.
Buffalo Tank Corp., South Ave., Dunellen, N. J.
Builders-Providence Div., B-I-F Industries, Inc., 381 Harris Ave., Providence 1, R. I.
Building Service Co., 4293 18th Ave., S., Minneapolis 17, Minn.
Bundy Tubing Co., 8109 E. Jefferson Ave., Detroit 14, Mich.
Bunker Hill Co., The, Sales & Fabrication Div., 2700 16th Ave., S. W., Seattle 4, Wash.
Burden Co., Alan E., 1940 Pontius Ave., Los Angeles 34, Calif.
Burdett Mfg. Co., 4920 S. Monitor, Chicago 38, Ill.
Burdett Oxygen Co. of Calif., 2014 Belgrave Ave., Huntington Park, Calif.
Burgess-Manning Co., Architectural Products Div., 5970 Northwest Highway, Chicago 31, Ill.
Burke Electric Co., Div. of Marathon Electric Mfg. Corp., 1201 W. 12th St., Erie, Pa.
Burling Instrument Co., Air Conditioning Div., 16 River Rd., Chatham, N. J.
Burlis Products Co., 804 Hopkinson Ave., Brooklyn 12, N. Y.
Burnett, Jr., Inc., J. F., 928 Jefferson Ave., Rochester, N. Y.
Burnham Corp., Main St., Irvington, N. Y.
Burr Oak Tool & Gauge Co., P. O. Box 471, 1009 Prairie Ave., Sturgis, Mich.
Burrows Mfg. Co., F. A., P. O. Box 725, York, Pa.
Burt Mfg. Co., 41 E. South St., Akron 11, O.
Burtchaell Heating Co., 2944 S. E. Powell, Portland, Ore.
Burton Mfg. Co., Middlefield, O.
Bury Compressor Co., 18th & Cascade Sts., Erie, Pa.
Buxton Mfg. Co., P. O. Box 94, Dover, N. J.
By-Buk Co., 4314 West Pico Blvd., Los Angeles 19, Calif.
Byers Co., A. M., Clark Bldg., Pittsburgh 22, Pa.
Byron Jackson Pumps, Inc., A Subsidiary of Borg-Warner Corp., P. O. Box 2017, Terminal Annex, Los Angeles 54.

C

CCA Products, Inc., P. O. Box 671, Glendale 5, Calif.
C & H Air Conditioning Fan Co., Inc., 1603 DeKalb Ave., N. E., Atlanta 6, Ga.
C.L.B. Co., 1917 Portsmouth, P. O. Box 6031, Houston 6, Tex.
Cabot, Inc., Samuel, 141 Milk St., Boston 9, Mass.
Cain Mfg. Co., 1111 N. 5th Ave., Birmingham 4, Ala.
Calbar Paint & Varnish Co., 2612-26 N. Martha St., Philadelphia 25.
Calculator Specialties Co., 122 S. Michigan Ave., Chicago 3, Ill.
Caldwell Co., W. E., 2120 Brook St., Louisville, Ky.
Calgon Co., P. O. Box 1346, Hagan Bldg., Pittsburgh 30, Pa.
California Brass Mfg. Co., 1447 Naud St., Los Angeles 12, Calif.
Caliputer, P. O. Box 586, Rancho Santa Fe, Calif.
Cambridge Filter Corp., 738 E. Erie Blvd., Syracuse 3, N. Y.
Camco Fittings, Inc., 301 State St., North Haven, Conn.
Cameron Iron Works, Inc., P. O. Box 1212, Houston, Tex.
Cam-Lok Div., Empire Products, Inc., P. O. Box 98, Cincinnati 36, O.
Camloc Fastener Corp., 22 Spring Valley Rd., Paramus, N. J.
Campbell Co., E. K., Manchester at 18th, Kansas City 26, Mo.
Campbell Co., J. A., 645 E. Wardlow Rd., Long Beach 7, Calif.
Campbell Heating Co., 3121 Dean Ave., Des Moines 17, Ia.
Campco Div., Chicago Molded Products Corp., 2733 N. Normandy Ave., Chicago, Ill.
Cam-Stat, Inc., Div. of The Paul Henry Co., 11833 West Olympic Blvd., Los Angeles 64, Calif.
Can Arm Corp., P. O. Box 156, Champlain, N. Y.
Cannon Chemical Co., Inc., 181 Portland St., Cambridge 41, Mass.
Canton Stoker Corp., 2400 Andrew Place, S. W., Canton 1, O.
Canvas Products Co., 2115 Locust St., St. Louis 3, Mo.
Capitol Mfg. & Supply Co., 153 W. Fulton St., Columbus, O.
Carboline Co., The, 32 Hanley Ind. Court, St. Louis 17, Mo.
Cardox Corp., 307 N. Michigan Ave., Chicago, Ill.
Cardwell Machine Co., 1901 E. Franklin St., Richmond 11, Va.
Carey Electronic Engineering Co., Metal Wool Div., 1880 Clifton Ave., Springfield, O.
Carey Mfg. Company, Philip, Wayne Ave., Lockland, Cincinnati 15, O.
Cargocaire Engineering Corp., 15 Park Row, New York 38, N. Y.
Carlen Associates, 40 West 57th St., New York, N. Y.
Carlin Co., The, 912 Silas Deane Hwy., Wethersfield 9, Conn.
Carling Turbine Blower Co., 8 Nebraska St., Worcester, Mass.
Carlon Products Corp., 10225 Meech Ave., Cleveland 5, O.
Carlson Rules Works, Disston Div., H. K. Porter Co., (Delaware), 1617 California St., Monrovia, Calif.
Carnes, Inc., John R., Greenlawn Ave. & Erie R. R., Lima, O.
Carnes Corp., Verona, Wis.
Carney Co., Inc., The, Mankato, Minn.
Carolina Aniline & Extract Co., 301 S. Cedar St., Charlotte, N. C.
Carolina Blower Co., Inc., 428-436 Morehead Ave., Greensboro, N. C.
Carpenter Heating & Air Conditioning Co., 2135 St. Clair Ave., Cleveland 14, O.
Carpenter & Paterson, Inc., 18 Hurley St., Cambridge 41, Mass.
Carpenter Sales Corp., 4545 E. 71st St., Cleveland 5, O.

Carpenter Steel Co., Alloy Tube Div., Union, N. J.
Carrier Corp., Carrier Parkway, Syracuse 1, N. Y.
Carter Controls, Inc., 2800 Bernice Road, Lansing, Ill.
Carvell Heat Equipment Co., 1217 Temple St., Los Angeles 26, Calif.
Carver Pump Co., 1460 Hershey Ave., Muscatine, Ia.
Cash Co., A. W., P. O. Box 551, Decatur, Ill.
Cash Valve Mfg. Corp., A. W., 6621 E. Wabash Ave., Decatur, Ill.
Cashin Co., W. D., 69 A. St., Boston 27, Mass.
Catawissa Valve & Fittings Co., Catawissa, Pa.
Cauhorn Distributing Co., 20722 W. Seven Mile, Detroit 19, Mich.
Cavalier Corp., Electric Heating Div., 343 West First St., Chattanooga, Tenn.
Ceilcote, Inc., 4832 Ridge Rd., Cleveland 9, O.
Ceilheat, Inc., 5212 Homberg Drive, Box 10066, Knoxville, Tenn.
Celotex Corp., The, 120 S. La Salle St., Chicago 3, Ill.
Cement Lined Pipe Co., 93 Brookline St., Lynn, Mass.
Central Die Casting & Mfg. Co., Inc., 2935 W. 47th St., Chicago, Ill.
Central Foundry Co., Foot of Pacific St., Newark 5, N. J.
Central Iron & Wire Works, 401 S.E. 4th St., Des Moines 16, Ia.
Central States Steel Boiler Co., 4649 W. Harrison St., Chicago 44, Ill.
Central Station Steam Co., 2920 E. Woodridge St., Detroit 7, Mich.
Central Steel & Wire Co., P. O. Box 5310-A, Chicago 80, Ill.
Central Transformer Corp., Pine Bluff, Ark.
Centrifix Corp., 3608 Payne Ave., Cleveland 14, O.
Centri-Spray Corp., 39001 Schoolcraft Rd., Livonia, Mich.
Century Electric Co., 1806 Pine St., St. Louis 3, Mo.
Century Engineering Corp., 401 3rd St., S. E., Cedar Rapids, Ia.
Century Fan & Ventilator Co., Inc., 45 Cedar St., Stamford, Conn.
Century Instrument Co., 220 East Milwaukee St., Detroit, Mich.
Cepi-American, Inc., 7767 North Ave., River Forest, Ill.
Certified Flexible Couplings, Inc., 37 N. Bond St., Mt. Vernon, N. Y.
Certified Furnace Corp., P. O. Box 1059, Trenton 8, N. J.
Chace Co., W. M., 1606 Beard Ave., Detroit 9, Mich.
Chain Belt Co., 4621 W. Greenfield, Milwaukee 1, Wis.
Chamberlin Co. of America, 13534 Woodward Ave., Detroit 3, Mich.
Champion Blower & Forge Co., Harrisburg Ave., and Charlotte St., Lancaster, Pa.
Champion Furnace Pipe Co., 215 Eaton St., Peoria 3, Ill.
Champion Pneumatic Machinery Co., 825 N. Pleasant St., Princeton, Ill.
Channel Master Corp., Ellenville, N. Y.
Chaplin-Fulton Mfg. Co., 5800 Grand Ave., Pittsburgh 25, Pa.
Chapman Valve Mfg. Co., The, Indian Orchard, Springfield, Mass.
Char-Gale Mfg. Co., 4325 Hiawatha Ave., Minneapolis 6, Minn.
Chase Brass & Copper Co., 236 Grand St., Waterbury 20, Conn.
Chatleff Valve & Mfg. Co., 205 Industrial Blvd., Austin 66, Tex.
Chelsea Fan & Blower Co., Inc., Subsidiary of Chelsea Products, Inc., 639 South Ave., Plainfield, N. J.
Chelsea Metal Stamping Co., 95 8th Ave., New York 11, N. Y.
Chem Industrial Co., Brooklyn 9, O.
Chemical Coatings & Engineering Co., 211 Brooke St., Media, Pa.
Chemical Sales Div., Firestone Plastics Co., Pottstown, Pa.
Chemical Solvent Co., 3005 N. 16th St., Birmingham, Ala.
Chemical Specialty Div. of Shooz Polish Mfg. Co., 1013 W. Oklahoma Ave., Milwaukee 15, Wis.
Chemiquip Co., 36 E. 10th St., New York 3, N. Y.
Chempump Corp., 1300 E. Mermaid Lane, Philadelphia 18, Pa.
Chemtrol, 10872 Stanford Ave., Lynwood, Calif.
Cheney Flashing Co., 623 Prospect St., Trenton 5, N. J.
Chesapeake & Ohio Railway Co., Terminal Tower, Cleveland 1, O.
Chesflex Div., St. Regis Paper Co., 684 Nepperhan Ave., Yonkers, N. Y.
Chester Cable Corp., Chester, N. Y.
Chesterton Co., A. W., 6 Ashland St., Everett 49, Mass.
Chicago Belting Div., Chicago-Allis Mfg. Corp., 113-125 N. Green St., Chicago 7, Ill.
Chicago Blower Corp., 9867 Pacific Ave., Franklin Park, Ill.
Chicago Bridge & Iron Co., 332 S. Michigan Ave., Chicago 4, Ill.
Chicago Die Casting Mfg. Co., 2510-14 W. Monroe St., Chicago 12, Ill.
Chicago Expansion Bolt Co., 1338 W. Concord Pl., Chicago 22, Ill.
Chicago Float Works, Not Inc., Dept. T., 2330 S. Western Ave., Chicago 8, Ill.
Chicago Forging and Mfg. Co., 2000 Southport Ave., Chicago 14, Ill.
Chicago Gasket Co., 1271 West North Ave., Chicago 22, Ill.
Chicago Metal Mfg. Co., 3724 S. Rockwell St., Chicago 32, Ill.
Chicago Nipple Mfg. Co., 650 Lake St., Oak Park, Ill.
Chicago Pneumatic Tool Co., 6 E. 44th St., New York, N. Y.
Chicago Pump Co., Subsidiary of Food Machinery & Chemical Corp., 622 Diversey Pkwy., Chicago 14, Ill.
Chicago Specialty Mfg. Co., 2954 Lawrence Ave., Chicago 25, Ill.
Chicago Steel Furnace Company, 9326 S. Anthony Ave., Chicago 17, Ill.
Chicago Steel Tank Co., Div. of U. S. Industries, Inc. 6400 W. 66th, Chicago 38, Ill.
Chicago-Wilcox Mfg. Co., 7701 Avalon Ave., Chicago 19, Ill.
Chicopee Mills, Inc., 47 Worth St., New York, N. Y.
Chiksan Co., Brea, Calif.
Childers Mfg. Co., P. O. Box 7467, Houston 8, Tex.
Chisholm-Moore Hoist Div., Columbus McKinnon Chain Corp., Tonawanda, N. Y.
Chrysler Airtemp, Div. of Chrysler Corp., 1600 Webster St., Dayton 1, O.
Cincinnati Electrical Tool Co., The, 300 Mt. Hope Ave., Cincinnati 8, O.
Cincinnati Metalcrafts Inc., 5000 Brotherton Rd., Cincinnati 9, O.
Cincinnati Shaper Co., Hopple, Garrard and Elam, Cincinnati 25, O.
Circle-Air Industries, Inc., 244 Herkimer St., Brooklyn 16, N. Y.
Circle Clamp Corp., 39 Broadway, New York 6, N. Y.
Circle Seal Products Co., Inc., 2181 E. Foothill Blvd., Pasadena 8, Calif.
Circuit Protective Devices Dept., General Electric Co., Woodford Ave., Plainville, Conn.
Cissell Mfg. Co., W. M., 831 South First St., P. O. Box 1143, Louisville 1, Ky.
Clarage Fan Co., Porter St., Kalamazoo 16, Mich.
Clark Bros. Bolt Co., Milldale, Conn.
Clark Controller Co., 1146 E. 152nd St., Cleveland 10, O.
Clark-Cooper Co., Inc., CC Pump Div., Market-Madison Sts., Palmyra, N. J.
Clark Flexible Link Shaft Co., P.O. Box 73, Newton Highlands 61, Mass.
Clark Mfg. Co., 1830 E. 38th St., Cleveland 14, O.
Claronex Products, Inc., 239 Java St., Brooklyn 22, N. Y.
Clauss Cutlery Co., Fremont, O.
Cla-Val Co., 17th & Placentia, Newport Beach, Calif.
Clay Equipment Corp., Cedar Falls, Ia.
Clayton & Lambert Mfg. Co., 1701 Dixie Hwy., Louisville 10, Ky.
Clayton Mfg. Co., 401 N. Temple City Blvd., El Monte, Calif.
Clayton Mark & Co., 1900 Dempster, Evanston, Ill.
Cleaver-Brooks Co., 326 E. Keefe Ave., Milwaukee 12, Wis.
Cleveland Brass Mfg. Co., The, P. O. Box 158, Kinsman, O.
Cleveland Controls, Inc., 1111 Brookpark Rd., Cleveland 9, O.
Cleveland Crane & Eng. Co., 5866 E. 289th St., Wickliffe, O.
Cleveland Graphite Bronze Co., Div. of Clevite Corp., 17000 St. Clair Ave., Cleveland 10, O.
Cleveland Heater Co., The, 2310 Superior Ave., Cleveland 14, O.
Cleveland Humidifier Co., 7802 Wade Park Ave., Cleveland 3, O.
Cleveland Punch & Shear Works Co., E. 40th and St. Clair Ave., Cleveland 14, O.
Cleveland Worm & Gear Co., 3300 E. 80th St., Cleveland 4, O.
Clifford Mfg. Co., Div. of Standard-Thomson Corp., 152 Grove St., Waltham 54, Mass.
Climax Metal Products Co., 863 E. 140 St., Cleveland 10, O.
Clinton Metallic Paint Co., Clinton, N. Y.
Clipper Mfg. Co., 65 E. 28th St., Kansas City 8, Mo.
Clizbe Bros. Mfg. Co., Plymouth, Ind.
Clock & Timer Dept., General Electric Co., Homer Ave., Ashland, Mass.
Clover Industries, Inc., 588 Young St., Tonawanda, N. Y.
Clow & Sons, Inc., James B., 201-299 N. Talman Ave., Chicago 12, Ill.
Cobell Industries, Inc., 600 South Wilhite St., Cleburne, Tex.
Cobra Metal Hose Div., D-K Mfg. Co., 5059 S. Kedzie, Chicago, Ill.
Cobra Pipe Supply & Coil Co., Inc., Brook St., P. O. Box 176, Elmwood 10, Conn.
Cochran Foil Corp., A Subsidiary of the Anaconda Co., P. O. Box 1654, 1430 South 13th St., Louisville 1, Ky.
Cochrane Corp., 3131 N. 17th St., Philadelphia 32, Pa.
Coe Mfg. Co., Bank St., Painesville, O.
Coen Co., 40 Boardman Pl., San Francisco 3, Calif.
Coffin Co., Jr., J. S., 326 S. Dean St., Englewood, N. J.
Coffing Hoist Div., Duff-Norton Co., Danville, Ill.
Cole-Sewell Engineering Co., 2288 University Ave., St. Paul 4, Minn.
Coleman Co., Inc., The, 250 N. St. Francis St., Wichita 1, Kans.
Colgate Co., Charles A., 528 Washington Rd., Pittsburgh 28, Pa.
Collins Machinery Corp., 5474 Alhambra Ave., Los Angeles 32, Calif.
Colonial Plastics Mfg. Co., Industrial Div., 2685 E. 79th St., Cleveland 4, O.
Color-Art Printing & Stationery Co., 201 South Kirkwood Rd., Kirkwood 22, Mo.
Colt Ventilation of America, Inc., 4652 Hollywood Blvd., Los Angeles 27, Calif.
Columbia Boiler Company of Pottstown, Pottstown, Pa.
Columbia Cement Co., 150 Ingraham St., Brooklyn, N. Y.
Columbia Electric Mfg. Co., 4519 Hamilton Ave., Cleveland 14, O.
Columbia Engineering Service Co., 4025 Sebastopol Hiway, Santa Rosa, Calif.
Columbia-Geneva Steel Div., United States Steel Corp., 120 Montgomery St., San Francisco 6, Calif.
Columbian Vise & Mfg. Co., 9021 Bessmer, Cleveland, O.
Columbus Steam Pump Wks. Co., 724 W. Gay St., Columbus 8, O.
Combustion Engineering Inc., 200 Madison Ave., New York 16, N. Y.
Combustion Equipment Co., 1202 15th St., Moline, Ill.
Comfort Products Inc., P. O. Box 8568, 440 Hillburn Dr., Dallas 16, Tex.
Commercial Filters Corp., 2 Main St., Melrose 76, Mass.
Commercial Plastics Co., 945 George St., Chicago 14, Ill.
Commercial Shearing & Stamping Co., 1775 Logan, P. O. Box 239, Youngstown 1, O.
Commercial Solvents Corp., 260 Madison, New York, N. Y.
Commercialaire Corp. of America, 840 E. 98th St., Brooklyn 36, N. Y.
Committee on Steel Pipe Research, American Iron and Steel Institute, 150 E. 42nd St., New York 17, N. Y.
Commonwealth Brass Corp., 5781-5835 Commonwealth Ave., Detroit 8.
Cond-Air Div., Elliott Engineering Co., 2800 E. Century Blvd., Lynwood, Calif.
Condensation Engineering Corp., 3511 W. Potomac Ave., Chicago 31.
Condenser Service & Engineering Co., Inc., 150 Observer Highway, Hoboken, N. J.
Conditioned Air, Inc., P. O. Box 2429, Charleston, W. Va.
Cone-Drive Gears Div., Michigan Tool Co., 7171 E. McNichols, Detroit 12, Mich.
Congress Drives Div., Tann Corp., 3750 E. Outer Drive, Detroit 34.
Conneaut Plastic Metallic Packing Co., Conneaut, O.
Connor Engineering Corp., Danbury, Conn.
Conoflow Corp., Subsidiary of Walworth Co., Dept. P, 2100 Arch St., Philadelphia 3, Pa.
Consolidated General Products, Inc., 24th & Nicholson Sts., Houston 8.
Consolidated Metal Products Corp., Albany, N. Y.
Consolidated Pipe Co. of America, 1066 Home Ave., Akron 10, O.
Constad Laboratories, 85-02 162nd St., Jamaica 32, N. Y.
Construction Specialties, Inc., 55 Winans Ave., Cranford, N. J.
Consumer Products, Motor Wheel Corp., Lansing 3, Mich.
Continental Air Filters, Inc., Box 1647, Louisville 1, Ky.
Continental Can Co., Millsplastic Pipe Div., 100 E. 42nd St., New York 17, N. Y.

Continental-Diamond Fibre Corp., Newark, Del.
Continental Electric Co., Inc., 323 Ferry St., Newark, N. J.
Continental Electric Equipment Co., 205 W. 4th St., Cincinnati 2, O.
Continental Equipment Co., Div. of Fisher Governor Co., Coraopolis, Pa.
Continental Machine Co., 2345 W. Nelson St., Chicago 18, Ill.
Continental Mfg. Co., P. O. Box 4048, Stansbury Rd. & B&O RR, Baltimore 22, Md.
Continental Products Co., 1150 E. 222nd St., Euclid 17, O.
Continental Radiant Glass Heating Corp., 1 E. 35th St., New York 16.
Continental Rubber Wks., 1935 Liberty St., Erie, Pa.
Continental Screw Co., Mt. Pleasant St., New Bedford, Mass.
Continental Tapes, Cayce, S. C.
Contour Marker Corp., 1843 E. Compton Blvd., Compton 2, Calif.
Controlair Mfg. Co., 1932 S. Compton Ave., Los Angeles, Calif.
Control Co. of America, Soreng Div., 9555 Soreng Ave., Schiller Park, Ill.
Convector Corp., 52 Canal St., Washington, D. C.
Cook Co., Loren, 227 Depot St., Berea, O.
Cook Electric Co., 2700 Southport Ave., Chicago 14, Ill.
Coolerator Div., McGraw-Edison Co., 704 N. Clark St., Albion, Mich.
Cool-Ette, Inc., 7535 W. 8 Mile Rd., Detroit 21, Mich.
Cooley Co., E. C., 1186 Folsom St., San Francisco, Calif.
Cooper Alloy Corp., Bloy St. & Ramsey Ave., Hillside 5, N. J.
Cooper-Bessemer Corp., The, Mt. Vernon, O.
Cooper Hewitt Electric Co., Div. of Sperti-Faraday, Inc., 720-732 Grand St., Hoboken, N. J.
Copeland Refrigeration Corp., Sidney, O.
Copes-Vulcan Div., Blaw-Knox Co., 939 West 26th St., Erie 4, Pa.
Coppus Engineering Corp., 344 Park Ave., Worcester 10, Mass.
Corbin Hose Clamp Div., American Hardware Corp., New Britain, Conn.
Corbman Bros., Inc., 25th & York St., Philadelphia, Pa.
Cordo Chemical Corp., 34 Smith St., Norwalk, Conn.
Corite Products, Inc., 6553 W. George St., Chicago 34, Ill.
Corley Co., Inc., The, 103 E. Main St., Plainville, Conn.
Corning Glass Works, Corning, N. Y.
Cornish-Rutland Co., Williamstown, Mass.
Corrosion Control Co., Inc., 33 W. 42nd St., New York 36, N. Y.
Corrosite Div., Reliance Paint Co., 64 So. 6th St., Brooklyn, N. Y.
Corro-Vent, Inc., 2816 Spring Grove Ave., Cincinnati 25, O.
CO Two Systems, Fyr-Fyter Co., U. S. Route 1, Newark, N. J.
Coughlan Co., G. N., West Orange, N. J.
Couplings Co., 2205 W. Roosevelt Rd., Chicago 8, Ill.
Courier Associates, Inc., 570 Lexington Ave., New York, N. Y.
Cox & Co., Inc., 115 E. 23rd St., New York, N. Y.
Cox Mfg. Co., Ridgeville, Ind.
Cramer Controls Corp., Centerbrook, Conn.
Crane Associates, Robert S., 500 Hutton Place, Columbus, O.
Crane Co., 836 S. Michigan Ave., Chicago 5, Ill.
Crane Packing Co., 6458 Oakton St., Morton Grove, Ill.
CraneVeyor Corp., 1240 S. Boyle Ave., Los Angeles 23, Calif.
Crawford Co., 3220 W. 31st St., Chicago 23, Ill.
Crawford Fitting Co., 884 East 140th St., Cleveland 10, O.
Crescent Insulated Wire & Cable Co., Trenton 5, N. J.
Crescent Plastics, Inc., 955 Diamond Ave., Evansville, Ind.
Crescent Tool Co., 230 Harrison St., Jamestown, N. Y.
Croker Fire Protection Co., 32 W. 31st St., New York, N. Y.
Croll-Reynolds Engineering Co., Inc., 17 John St., New York 38, N. Y.
Croll & Son, Jesse G., 2326-2606 Germantown Ave., Philadelphia, Pa.
Crosby Valve & Gage Co., 43 Kendrick St., Wrentham, Mass.
Crotty Mfg. Corp., 133-15 35th Ave., Flushing, L. I., N. Y.
Crown Controls Co., Inc., 40-44 S. Washington St., New Bremen, O.
Crown Engineer Corp., Locust St., Keyport, N. J.
Crucible Steel Co. of America, Oliver Bldg., P. O. Box 88, Pittsburgh 30, Pa.
Cryer Trap & Valve Div., Encor Corp., 28 Joralemon St., Belleville, N. J.
Culligan Inc., Northbrook, Ill.
Cuno Engineering Corp., 78 S. Vine St., Meriden, Conn.
Curtis Development & Mfg. Co., 3266 N. 33rd St., Milwaukee 16, Wis.
Curtis Mfg. Co., Refrigeration Div., 1950 Kienlen Ave., St. Louis 20, Mo.
Custanite Corp., 1228 Utica Ave., Brooklyn 3, N. Y.
Custom Engineering Co., 406 S. Main St., Los Angeles 13, Calif.
Cutler-Hammer, Inc., 421 N. 12th St., Milwaukee 1, Wis.
Cybertronic Corp. of America, Third & Morton Ave., Chester, Pa.
Cyclotherm Div., National-U. S. Radiator Corp., 157 E. First St., Oswego, N. Y

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Dahl, G. W., Tupelo St., Bristol, R. I.
Dalzen Mfg. Co., 525 South Riverside, St. Clair, Mich.
Damascus Tube Co., Greenville, Pa.
Dampney Co., The, 50 Business St., Hyde Park, Boston 36, Mass.
Dana Fan & Blower Corp., 49 Central Ave., Cincinnati 2, O.
Danielson Mfg. Co., Danielson, Conn.
Darcoid Co., Inc., 145 Sixth Ave., New York 13, N. Y.
Darling Valve & Mfg. Co., 701 First St., Williamsport, Pa.
Das Div. of The Zeller Corp., Fort Wayne Rd., Defiance, O.
Davey Compressor Co., Kent, O.
David-Ludwig Co., 14290 Goddard, Detroit, Mich.
Davidson Co., M. T., 7 Dey St., New York 7, N. Y.
Davidson Hyduty Roof Fan Co., 213 California St., Newton, Mass.
Davis Engineering Corp., 1070 E. Grand St., Elizabeth 4, N. J.
Davis Instruments, Div. of Davis Emergency Equipment Co., Inc., 201 Halleck St., Newark 4, N. J.
Davis Regulator Co., 2546 S. Washtenaw Ave., Chicago 8, Ill.
Day Co., The, 810-830 Third Ave., N. E., Minneapolis 13, Minn.
Day & Night Mfg. Co., 855 Anaheim-Puente Rd., LaPuente, Calif.
Dayton Automatic Stoker Co., 1910 W. Dorothy Lane, Dayton 39, O.
Dayton Electric Mfg. Co., 126 S. Oakley Blvd., Chicago 12, Ill.
Dayton Rogers Mfg. Co., 2824 13th Ave. S., Minneapolis 7, Minn.
Dayton Rubber Co., 2342 W Riverview Ave., Dayton 1, O.
Daytronic Corp. 216 S. Main St., Dayton 2, O.
Dean Brothers Pumps, Inc., 323 W. 10th St., Indianapolis 7, Ind.
Dean Hill Pump Co., 4000 E. 16th St., Indianapolis 7, Ind.
Deansteel Products Co., 111 Merchants St., San Antonio, Tex.
Dean Thermo-Panel Coil Div., Dean Products, Inc., 616 Franklin Ave., Brooklyn 38, N.Y.
Dearborn Chemical Co., Merchandise Mart Plaza, Chicago 54, Ill.
Dearborn Stove Co., 1700 W. Commerce St., P. O. Box 5527, Dallas 2, Tex.
Dearborn Tape & Label Co., P. O. Box 4119, N. E. Station, Dearborn, Mich.
Debevoise Co., The, 74-84 20th St., Brooklyn 32, N. Y.
DeBothezat Fans Div., American Machine & Metals, Inc., East Moline, Ill.
Decatur Pump Co., 2750 Nelson Park Rd., Decatur, Ill.
Defender Instrument & Regulator Co., Boody, Ill.
Degree Corp., P. O. Box 8141, Kansas City, Mo.
De Laval Steam Turbine Co., 871 Nottingham Way, Trenton 2, N. J.
Delavan Mfg. Co., 811 Fourth Ave., West Des Moines, Ia.
Delaware Insulation Co., 5th Ave. & Colman St., Wilmington, Del.
Delco Appliance Div., General Motors Corp., P. O. Box 230, Rochester 1, N. Y.
Delco Products Div., General Motors Corp., 329 E. First St., Dayton 1, O.
Delta Welder Corp., 8525 Livernois, Detroit 4, Mich.
Deltron, Inc., 2905 Leithgow St., Philadelphia, Pa.
Deming Co., 14 Aetna St., Salem, O.
Demo-Haines Tool Corp., 2151 East Rosecrans, El Segundo, Calif.
Demuth & Sons, Inc., Charles, 245 Elm Place, Mineola, L. I., N. Y.
Denbo Engineering and Sales Co., Inc., 3301 Martindale Ave., Indianapolis.
Dennis Chemical Co., 2701 Papin, St. Louis, Mo.
Dersch, Gesswein & Neuert, Inc., 4849 W. Grand Ave., Chicago 39, Ill.
Design Engineers, 214 S. Church St., Rockford, Ill.
Desmond-Stephan Mfg. Co., Urbana, O.
Desomatic Products, Inc., 1109 W. Broad St., Falls Church, Va.
d'Este Div., Kaye & MacDonald, Inc., 11-15 Central Ave., West Orange, N. J.
De-Tec-Tronic Corp., 2512 N. Halsted St., Chicago 14, Ill.
Detroit Blower Corp., 9867 Pacific Ave., Franklin Park, Ill.
Detroit Controls Div. of American-Standard, 5900 Trumbull Ave., Detroit 8, Mich.
Detroit Controls Div., American-Standard, Great Meadow Rd., Stratford, Conn.
Detroit Deisel Engine Div., General Motors Corp., 13400 W. Outer Dr., Detroit 28, Mich.
Detroit Float & Stamping Co., 625 Monroe, Detroit, Mich.
Detroit Hoist & Machine Co., 8200 Morrow St., Detroit 11, Mich.
Detroit Stamping Co., 350 Midland Ave., Detroit 3, Mich.
Detroit Stoker Co., 1510 East 1st St., Monroe, Mich.
Deutsch Co., The, 7000 Avalon Blvd., Los Angeles 3, Calif.
Devco Engineering, Inc., Control Systems Div., Pier Lane West, Caldwell Township, Caldwell, N. J.
Devcon Corp., Danvers, Mass.
Devices, Inc., A Div. of Miracle Adhesives Corp., 250 Pettit Ave., Bellmore, N. Y.
DeVilbiss Co., The, 300 Phillips Ave., Toledo 1, O.
DeVilbiss Metal Fabricators Co., 17900 Ryan Rd., Detroit 12, Mich.
Devine Mfg Co., Inc., J. P., 49th and A.V.R.R., Pittsburgh 1, Pa.
Dewey Gas Furnace Co., 101 E. Baltimore Ave., Detroit 2, Mich.
De Zurik Corp., Sartell, Minn.
Dialatemp, Inc., 706 Chestnut St., St. Louis 1, Mo.
Dialight Corp., 60 Stewart Ave., Brooklyn 37, N. Y.
Diamond Expansion Bolt Co., Inc., 500 North Ave., Garwood, N. J.
Diamond Machine Tool Co., 5111 Coffman-Pico Rd., Pico, Calif.
Diamond Mfg. Co., 253 W. Eighth St., Wyoming, Pa.
Diamond Power Specialty Corp., P. O. Box 415, Lancaster, O.
Diamond Products, Inc., 333 Prospect St., Elyria, O.
Diamond Tool & Horseshoe Co., Duluth, Minn.
Dia-Plug Valve Corp., 1622 Fillmore Ave., Buffalo, N. Y.
Dickson Co., The, 7422 Woodlawn Ave., Chicago 19, Ill.
Diehl Mfg. Co., Finderne Plant, 1106 Finderne Ave., Somerville, N. J.
Dielectric Products Co., Inc., 125 Virginia Ave., Jersey City 5, N. J.
Dietz Co., Henry G., 12-16 Astoria Blvd., Long Island City 2, N. Y.
Dietzgen Co., Eugene, 2425 Sheffield Ave., Chicago 14, Ill.
Dillon & Co., Inc., W. C., 14620 Keswick St., Van Nuys, Calif.
Dillon Steam Boiler Wks., Inc., D. M., Crocker St., Fitchburg, Mass.
Dings Magnetic Separator Co., 4799 W. Electric Ave., Milwaukee 46.
Division Lead Co., 7742 W. 61st Pl., Summit, Ill.
Dixie Raydiant Electric Heat Corp., 66 Eleventh St., N. E., Atlanta 9, Ga.
Dixon Crucible Co., Joseph, Wayne & Monmouth Sts., Jersey City 3, N. J.
DoAll Co., The, 254 N. Laurel Ave., Des Plaines, Ill.
Dockson Corp., 3839 Wabash Ave., Detroit 8, Mich.
Dockstader, Inc., S. E., 221 Munsey Bldg., Washington 4, D. C.
Dodge Mfg Corp., 500 S. Union St., Mishawaka, Ind.
Doerr Electric Corp., 508 N. 4th St., Cedarburg, Wis.
Dole Refrigerating Co., 5910 N. Pulaski, Chicago 46, Ill.
Dole Valve Co., The, 6201 Oakton St., Morton Grove, Ill.
Dollinger Corp., 9 Centre Park, Rochester 3, N. Y.
Domestic Mfg. Corp., 2415 McAllister, Houston 24, Tex.
Domestic Pump & Mfg. Corp., Shippensburg, Pa.

Donaldson Div., Marvin D. Shafer Co., Inc., 2915 Knox Ave., Los Angeles 39, Calif.
Dormeyer Industries, 3418 Milwaukee Ave., Chicago 41, Ill.
Dormont Mfg. Co., 5607 Butler St.. Pittsburgh 1, Pa.
Dow Chemical Co., The, Midland, Mich.
Dow Corning Corp., Midland, Mich.
Dowell Div. of The Dow Chemical Co., P. O. Box 536, Tulsa 1, Okla.
Downing Steel Products, 2305 Smithville Rd., Dayton 10, O.
Downingtown Iron Works, Inc., Div. of Pressed Steel Tank Co., Wallace Ave., Downingtown, Pa.
Doyle & Roth Mfg. Co., Inc., Foot of 23rd St., Brooklyn 32, N. Y.
Doyle Vacuum Cleaner Co., 225 Stevens St., S. W., Grand Rapids 2, Mich.
Drage Products, Inc., 406 32nd St., Union City, N. J.
Dravo Corp., Machinery Div., Dravo Bldg., Pittsburgh 22, Pa.
Drayer-Hanson, Division of National-U. S. Radiator Corp., Box 2215, Terminal Annex, Los Angeles 54, Calif.
Dreier Brothers Inc., 7301 Woodlawn Ave., Chicago 19, Ill.
Dreis & Krump Mfg. Co., 7404 Loomis Blvd., Chicago 36, Ill.
Dresser Mfg. Div., Dresser Industries, Inc., 49 Fisher Ave., Bradford, Pa.
Drew & Co., Inc., E. F., 15 E. 26th St., New York 10, N. Y.
Drico Industrial Corp., 100 8th St., Passaic, N. J.
Driv-Way Lite Co., P. O. Box 2850, Denver, Colo.
Dryer Electric Corp., Fan Div., 164-166 Wallabout St., Brooklyn 6, N. Y.
Drying Systems Co., 1812½ W. Foster Ave., Chicago 40, Ill.
Dryomatic Corp., 806 N. Fairfax St., P. O. Box 334, Alexandria, Va.
Dual-Air Fan Co., P. O. Box 208, Hampshire, Ill.
Ducon Co., Inc., The, 147 E. 2nd St., Mineola, N. Y.
Dudgeon, Inc., Richard, 789 Bergen St., Brooklyn 38, N. Y.
Dunham-Bush, Inc., 179 South St., West Hartford 10, Conn.
Dunkirk Radiator Corp., Dunkirk, N. Y.
du Pont de Nemours & Co., E. I., Electrochemicals Dept., Wilmington 98, Del.
du Pont de Nemours & Co., E. I., Explosives Dept., Chemical Sales, Wilmington 98, Del.
du Pont de Nemours & Co., E. I., Finishes Div., Wilmington 98, Del.
du Pont de Nemours & Co., Inc., E. I., "Freon" Products Div., Wilmington 98, Del.
du Pont de Nemours & Co., E. I., Grasselli Chemicals Dept., Wilmington 98, Del.
du Pont de Nemours & Co., E. I., Photo Products Dept., Wilmington 98, Del.
du Pont de Nemours & Co., E. I., Polychemicals Dept., Wilmington 98, Del.
Durabla Mfg. Co., 114 Liberty St., New York 6, N. Y.
Durable Rubber Products, 609 W. Lake St., Chicago, Ill.
Duralast Filter Corp., 439 Burdette St., New Orleans 18, La.
Duraloy Co., Scottdale, Pa.
Durant Insulated Pipe Co., 325 Demeter St., E. Palo Alto, Calif.
Durant Insulated Pipe Co., Inc., Williamstown, N. J.
Dura-Vent Corp., 2525 El Camino Real, Redwood City, Calif.
Durez Plastics Div., Hooker Chemical Corp., 1953 Walck Rd., North Tonawanda, N. Y.
Duriron Co., Inc., The, 450 N. Findlay St., Dayton 1, O.
Durkee-Atwood Co., 215 N. E. 7th St., Minneapolis, Minn.
Duro Co., The, 537 E. Monument Ave., Dayton 1, O.
Duro-Dyne Corp., Route 110, Farmingdale, Long Island, N. Y.
Duro Metal Products Co., 2649 N. Kildare Ave., Chicago 39, Ill.
Dustender Co., 3627 Pontiac Rd., Ann Arbor, Mich.
Dust Filter Co., 134 S. La Salle St., Chicago 3, Ill.
Dust Suppression & Engineering Co., P. O. Box 67, Lake Orion, Mich.
Dustex Corp., 1758 Walden Ave., Buffalo 25, N. Y.
Dutch Brand Div., Johns-Manville Corp., 7800 S. Woodlawn Ave., Chicago 19, Ill.
DuVerre, Inc., 374 Delaware Ave., Buffalo 2, N. Y.
Dwyer Mfg. Co., F. W., P. O. Box 373, Michigan City, Ind.
Dyfoam Corp., 202 E. Cherry, Newcastle, Pa.
Dynametrics Corp., Northwest Industrial Park, Burlington, Mass.
Dynamic Air Engineering, Inc., 7412 Maie Ave., Los Angeles 1, Calif.

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Eagan Co., Inc., Walter H., 2336-38 Fairmount Ave., Philadelphia 30.
Eagle Chemical Co., Inc., 20 W. Jackson Blvd., Chicago 4, Ill.
Eagle Copper Products Co., Inc., 600 Johnson Ave., Brooklyn, N. Y.
Eagle-Picher Co., American Bldg., Cincinnati 1, O
Eastern Boiler Co., 524 Wethersfield Ave., Hartford 14, Conn.
Eastern Industries Inc., 100 Skiff St., Hamden 14, Conn.
Eastern Stainless Steel Corp., P. O. Box 1975, Baltimore 3, Md.
Eastman Chemical Products, Inc., Subsidiary, Eastman Kodak Co., 260 Madison Ave., New York 16, N. Y.
Eastman Kodak Co., 343 State St., Rochester 4, N. Y.
Easton R. S. Corp., 876 Pacific St., Brooklyn 38, N.Y.
Eaton Air Filter Co., 2609 E. Larned, Detroit, Mich.
Eaton Mfg. Co., Foundry Div., 700 E. Huron Ave., Vassar, Mich.
Ebco Mfg. Co., 265 N. Hamilton Rd., Columbus 13, O.
Ebert Electronics Corp., 212-26 Jamaica Ave., Queens Village 28, N. Y.
Eclipse Fuel Engineering Co., 1139 Buchanan St., Rockford, Ill.
Eco Engineering Co., 12 New York Ave., Newark 1, N. J.
Econo Products Company Inc., Div. of Viking Instruments, Inc., East Haddam, Conn.
Economy Valve Seat Co., 1436 N. Keating, Chicago 51, Ill.
Eddington Metal Specialty Co., P. O. Box K, Eddington, Pa.
Eddy Valve Co., Waterford, N. Y.
Eder Instrument Co., 2293 N. Clybourn Ave., Chicago, Ill.
Edgewood Mfg. Co., Inc., 2215 Merced Ave., El Monte, Calif.
Edison Heatube Div., McGraw-Edison Co., Allegan, Mich.
Edison Industries, Thomas A., Instrument Div., McGraw-Edison Co., 60 Lakeside Ave., West Orange, N. J.
Eds-Wil Burner Corp., 3737 N. Lincoln, Chicago 13, Ill.
Edward Valves, Inc., 1200 W. 145th St., East Chicago, Ind.
Edwards, L. V., 32 Irving Place, Rockville Center, N. Y.
Edwards Engineering Corp., Pompton Plains, N. J.
Ehret Magnesia Mfg. Co., Valley Forge, Pa.
Eisler Engineering Co., Inc., 750 S. 13th St., Newark 3, N. J.
Ejay Baseboard Mfg. Co., 124 Boyd St., Winsted, Conn.
Elastic Porcelain Lining Corp., 221 Norris Dr., Rochester 10, N. Y.
Elcen Metal Products Co., 9325 King St., Franklin Park, Ill.
Elco Tool & Screw Corp., 1111 Samuelson Rd., Rockford, Ill.
Electrend Products Corp., 606 Water St., St. Joseph 2, Mich.
Electric Arc, Inc., 152 Jelliff Ave., Newark 8, N. J.
Electric Auto-Lite Co., Instrument & Gauge Div., Toledo 1, O.
Electric Boat Div., General Dynamics Corp., Groton, Conn.
Electric Controller & Mfg. Co., Div. of Square D Co., 4526 Lee Rd., Cleveland 28, O.
Electric Furnace-Man, Inc., Emmaus, Pa.
Electric Heating & Cooling, Inc., 890-898 Broadway, Newark 4, N. J.
Electric Hose & Rubber Co., Wilmington, Del.
Electric Machinery Mfg. Co., 800 Central Ave., Minneapolis 13, Minn.
Electric Motors & Specialties, Inc., King & Hamsher Sts., Garrett, Ind.
Electric Products Co., 1725 Clarkstone Rd., Cleveland, O.
Electric Steel Foundry Co., 2141 N. W. 25th Ave., Portland 10, Ore.
Electriliving Corp., 4913 College Ave., Indianapolis 5, Ind.
Electro-air Cleaner Co., Inc., Olivia & Sproul Sts., McKees Rocks, Pa.
Electro Devices, Inc., P.O. Box 156, Mt. Prospect, Ill.
Electro Dynamic Div. of General Dynamics Corp., Bayonne, N. J.
Electrofilm, Inc., P. O. Box 106, North Hollywood, Calif.
Electrol Burner Mfg. Co., Inc., 22 Union Ave., Rutherford, N. J.
Electromode Div. of Commercial Controls Corp., 570 Culver Rd., Rochester 3, N. Y.
Electronics Corp. of America, 1 Memorial Dr., Cambridge 42, Mass.
Electro-Products Mfg. Co., 8310 N. E. Highway 99, Vancouver, Wash.
Electro Rust-Proofing Corp., 30 Main St., Belleville, N. J.
Electro-Switch & Controls Inc., 5755 Camille Ave., Culver City, Calif.
Electro-Therm, Inc., 931 Selim Rd., Silver Spring, Md.
Electro Tool Corp., 2609 Sunset Blvd., Houston 5, Tex.
Electrovector, Inc., 475 Flushing Ave., Brooklyn 5, N. Y.
Electrovent Fan & Mfg. Co., 812 W. Lake St., Chicago 7, Ill.
Elgen Mfg. Co., 32-49 Gale Ave., Long Island City 1, N. Y.
Elgin Softener Corp., Elgin, Ill.
Elgo Shutter & Mfg. Co., 2738 W. Warren Ave., Detroit 8, Mich.
Elkhart Products Corp., 1255 Oak St., Elkhart, Ind.
Elliott Co., Jeannette, Pa.
Ellicott Fabricators, Inc., Clare & Kolman Sts., Baltimore 30, Md.
Ellis & Watts Products, Inc., P. O. Box 33, Cincinnati 36, O.
Ellison Draft Gage Co., 548 W. Monroe St., Chicago, Ill.
Elraco Engineering Co., 732 W. 58th St., Los Angeles 37, Calif.
El-Tronics, Inc., 1420 Walnut St., Philadelphia 2, Pa.
Embassy Steel Products, Inc., 890 Stanley Ave., Brooklyn 8, N. Y.
Emco Pneumatic Corp., 1317 Locust St., Des Moines, Ia.
Emerson Electric Mfg. Co., The, 8100 Florissant Ave., St. Louis 21.
Emerson Radio & Phono Corp., 14th & Coles St., Jersey City, N. J.
Emjay Maintenance Engineers, 327 Union Ave., Rutherford, N. J.
Empire Chemical Products Co., 10 Longworth St., Newark 2, N. J.
Empire Ventilation Equipment Co., 35-39 Vernon Blvd., Long Island City, N. Y.
Enderle, Inc., Ltd., Frank X., 1715 San Fernando Rd., Los Angeles 65, Calif.
Engelhard, Inc., Charles, 850 Passaic Ave., East Newark, N. J.
Engelhard Industries, Inc., 113 Astor St., Newark 2, N. J.
Engesser & Co., William L., 9745 East Rush St., El Monte, Calif.
Engineer Co., 75 West St., New York 6, N. Y.
Engwald Corp., The, 125 Sheridan Blvd., Inwood, Long Island, N. Y.
Enjay Co., 15 W. 51st St., New York, N. Y.
Enterprise Engine & Machinery Co., Subsidiary of General Metals Corp., 18th & Florida Sts., San Francisco 10, Calif.
Epco Sales, Inc., 3204 Sackett Ave., Cleveland 9, O.
Equipco, Inc., 1238 N.W. Glisan, Portland 9, Ore.
Erdle Perforating Co., 171 York St., Rochester 11, N. Y.
Ergolyte Mfg. Co., 3627 Lawrence St., N., Philadelphia 40, Pa.
Erickson Specialty Co., 10 Cayuga St., P. O. Box 141, Cohoes, N. Y.
Erie Bolt & Nut Co., Erie, Pa.
Erie City Iron Wks., 1450 East Ave., Erie, Pa.
Erie Tool Wks., 735 W. 12th St., Erie, Pa.
Ernst Water Column & Gauge Co., Livingston, N. J.
Ero Mfg. Co., 714 W. Monroe St., Chicago 6, Ill.
Ervite Corp., 4000 W. Ridge Rd., Erie, Pa.
Ess Instrument Co., 96 S. Washington Ave., Bergenfield, N. J.
Essex Wire Corp., 1601 Wall Street, Ft. Wayne 6, Ind.
Essick Mfg. Co., 1950 Santa Fe Ave., Los Angeles 21, Calif.
Eutectic Welding Alloys Corp., 40-40 172 St., Flushing 58, N. Y.
Evanite Plastic Co., Div. of the Evans Pipe Co., Uhrichsville, O.
Evans Corp., The George, River Drive at 37th St., Moline, Ill.
Evans Machine Co., Inc., 122 S. Calverton Rd., Baltimore, Md.
Eveready Briksaw Co., 1104 Union Ave., Kansas City 1, Mo.
Everhot Heater Div., Temprite Products, Inc., Birmingham, Mich.
Everite Pump & Mfg. Corp., W. Roseville Rd., Lancaster, Pa.
Everlasting Valve Co., 49 Fisk St., Jersey City 5, N. J.
Everwarm, Inc., 3600 Pleasant Ridge Road, Knoxville, Tenn.
Evis Mfg. Co., 5955 N. Rockwell St., Chicago 45, Ill.
Excelsior Leather Washer Mfg. Co., 720-730 Chestnut St., Rockford, Ill.
Excelsior Steel Furnace Co., The, 546 W. Washington Blvd., Chicago.
Excelsior Tool & Machine Co., 31st & Ridge Ave., East St. Louis, Ill.
Exit-Aire Ventilating Co., 13690 Vaughn St., Pacoima, Calif.
Extremultus, Inc., 405 Lexington Ave., New York 17, N. Y.
Extruded Plastics, Inc., New Canaan Ave., Norwalk, Conn.

F

F 5 Air Conditioning Corp., 1815 S. Maybelle, Box 9355, Tulsa, Okla.
Faber Engineering Co., Inc., 240 W. Washington St., Norristown, Pa.
Fabreeka Products Co., Inc., 1190 Adams St., Boston 24, Mass.
Fabri-Valve Co. of America, 2100 N. Albina, Portland, Ore.
Fafnir Bearing Co., The, 37 Booth St., New Britain, Conn.
Fairbanks Co., The, 393 Lafayette St., New York 3, N. Y.
Fairbanks, Morse & Co., 600 S. Michigan Ave., Chicago 5, Ill.
Fairmont Aluminum Co., Fairmont, W. Va.
Fairmount Tool & Forging, Inc., 10611 Quincy Ave., Cleveland 6, O.
Falcon Equipment Co., 13th St., New Brighton, Pa.
Falk Corp., 3010 W. Canal St., Milwaukee 1, Wis.
Falls Industries, Inc., 31915 Aurora Rd., Solon, O.
Falstrom Co., 26 Falstrom Court, Passaic, N. J.
Famco Machine Co., 3114 Sheridan Rd., Kenosha, Wis.
Fanner Mfg. Co., The, Brookside Park, Cleveland 9, O.
Farr Company, P. O. Box 45187, Airport Station, Los Angeles 45, Calif.
Farrell Associates, Charles, Valencia, Pa.
Farris Engineering Corp., 405 Commercial Ave., Palisades Park, N. J.
Farris Flexible Valve Corp., Palisades Park, N. J.
Fasco Industries, Inc., P. O. Box 509, Rochester 2, N. Y.
Fastway Fasteners, Inc., 1676 East 28th St., Lorain, O.
Fedders-Quigan Corp., 57 Tonawanda St., Buffalo 7, N. Y.
Fedders-Quigan Corp., Heating Div., P. O. Box 1690, Trenton 7, N. J.
Federal Boiler Co., Inc., Granite and West Sts., Midland Park, N. J.
Federal-Mogul Div., Federal-Mogul-Bower Bearings, Inc., 11031 Shoemaker St., Detroit 13, Mich.
Federal Pump Corp., 1144 Utica Ave., Brooklyn 3, N. Y.
Federal Seaboard Terra Cotta Corp., 10 E. 40th St., New York 16, N. Y.
Fee & Mason Mfg. Co., Inc., Manasquan, N. J.
Felt Products Mfg. Co., 7450 No. McCormick Blvd., Skokie, Ill.
Felters Company, The, 210 South St., Boston 11, Mass.
Fennelly Co., J. C., 1485 Bayshore Blvd., San Francisco, Calif.
Fenwal Inc., Pleasant St., Ashland, Mass.
Fenway Machine Co., 3107 N. Broad St., Philadelphia 32, Pa.
Fern, Ralph, 1007 Fisk St., Scranton 9, Pa.
Ferro Corp., 4150 East 56th St., Cleveland 5, O.
Fiber Bond Corp., 2237 S. LaSalle St., Chicago 16, Ill.
Fibercast Co., P. O. Box 727, Sand Spring, Okla.
Field Control Div., H. D. Conkey & Co., Mendota, Ill.
Fiese & Firstenberger Mfg., Inc., 2494 Railroad Ave., Fresno, Calif.
Filt-R-Ite Co., 1408 W. Harrison St., Chicago 7, Ill.
Filtrine Mfg. Co., Inc., 63 Wanamaker Ave., Waldwick, N. J.
Fine Products Co., 6240 Ogden, Berwyn, Ill.
Finn & Company, Inc., T. R., 200 Central Ave., Hawthorne, N. J.
Finnigan & Co., Inc., J. J., 722 Marietta, N. W., Atlanta, Ga.
Fischer & Porter Co., 600 Warminster Rd., Hatboro, Pa.
Fisher Governor Co., 205 S. First Ave., Marshalltown, Ia.
Fisher Research Laboratory, Inc., 1961 University Ave., Palo Alto, Calif.
Fitzgibbons Boiler Co., Inc., 101 Park Ave., New York 17, N. Y.
Flagg & Co., Inc., Stanley G., #3 Penn Center Plaza, Philadelphia 2, Pa.
Flanders Filters, Inc., Riverhead, Long Island, N. Y.
Flemm Lead Co., Inc., Bradley Ave., & School St., Long Island City, 1, N. Y.
Flexaust Co., 100 Park Ave., New York 17, N. Y.
Flexible Metal Hose Mfg. Co., 777 West 16th St., Costa Mesa, Calif.
Flexible Tubing Corp., Guilford, Conn.
Flexlock Corp., Box 178, Kent, O
Flexo Supply Co., Inc., 4649 Page Blvd., St. Louis 13, Mo.
Flexonics Corp., 1391 S. Third Ave., Maywood, Ill.
Flexrock Co., 36 & Filbert Sts., Philadelphia 4, Pa.
Flintkote Co., The, 30 Rockefeller Plaza, New York 20, N. Y.
Flodar Corp., 16911 St. Clair, Cleveland 10, O.
Flood Co., Hudson, O.
Flori Pipe Co., The, 5700 Bulwer, St. Louis 15, Mo.
Floridin Co., P. O. Box 989, Tallahassee, Fla.
Flow Corp., 85 Mystic St., Arlington 74, Mass.
Flowline Corp., New Castle, Pa.
Fluid Heat Div., Anchor Post Products, Inc., 6500 Eastern Ave., Baltimore 24, Md.
Fluid Systems, Inc., 1881 Dixwell Ave., New Haven 14, Conn.
Fluor Products Co., 12000 E. Washington Blvd., Whittier, Calif.
Fluxolder Products Co., 438 E. Woodbridge St., Detroit 26, Mich.
Flynn & Emrich Co., 301 Holliday St., Baltimore 2, Md.
Formica Corp., The, 4614 Spring Ave., Cincinnati, O.
Forney Engineering Co., 2705 Hawes St., Dallas 9, Tex.
Ft. Worth Steel & Machinery Co., P. O. Box 1038, Ft. Worth, Tex.
Forty-Eight Insulations, Inc., P. O. Box 472, Aurora, Ill.
Foster Co., Benjamin, 4636 W. Girard Ave., Philadelphia 31, Pa.
Foster Engineering Co., 835 Lehigh St., Union, N. J.
Foster Pump Wks., Inc., 46-A Washington St., Brooklyn 1, N. Y.
Foster Wheeler Corp., 666 Fifth Ave., New York 19, N. Y.
Foxboro Co., 106 Neponset Ave., Foxboro, Mass.
Fram Corp., Providence 16, R. I.
France Refractories Co., J. H., 1921 France Rd., Snow Shoe, Pa.
Franklin Balmar Corp., Woodberry, Baltimore 11, Md.
Franklin Dales Co., 180-184 E. Mill St., Akron 8, O.
Franklin Electric Co., Inc., 400 E. Spring St., Bluffton, Ind.
Franklin Plastics, Inc., Franklin, Pa.
Frasse & Co., Inc., Peter A., 17 Grand St., New York 13, N. Y.
Frederick Iron & Steel Inc., E. 7th St., Frederick, Md.
Freeman Heating Div., Illinois Iron & Bolt Co., Carpentersville, Ill.
Fresh'nd-Aire Co., Div. of Cory Corp., 3200 W. Peterson, Chicago, Ill.
Fretz-Moon Tube Co., Inc., P. O. Box 551, Butler, Pa.
Frick Co., Waynesboro, Pa.
Fricke, Fred J., 4404 Avenida Estrellita, Albuquerque, N. M.
Friedrich Refrigerators, Inc., 1117 E. Commerce, San Antonio, Tex.
Friermood Machine Works, Converse, Ind.
Friez Instrument Div., Bendix Aviation Corp., Taylor Ave., Towson, Baltimore 4, Md.
Frigid, Inc., 128 32nd St., Brooklyn, N. Y.
Frigidaire Div., General Motors Corp., Dayton 1, O.
Frigid Coil, Inc., 9860 Rush St., El Monte, Calif.
Frigikar Corp., 1602 Cochran, Dallas, Tex.
Frontier Bronze Corp., Packard Rd., Niagara Falls, N. Y.
Fuelguard Co., 5643 Dyer St., Dallas 6, Tex.
Fuel Reduction Corp., 220 N. Ada St., Chicago 7, Ill.
Fulflo Specialties Co., Inc., The, Blanchester, O.
Fuller Co., 124 Bridge St., Catasauqua, Pa.
Fuller Co., D. William, 2320 E. 75th St., Chicago 49, Ill.
Fuller Co., H. B., 255 Eagle St., St. Paul 2, Minn.
Fuller Co. of Calif., H. B., 57 So. Linden Ave., S. San Francisco.
Fulton Sylphon Div., Robertshaw-Fulton Controls Co., Box 400, Knoxville 1, Tenn.
Furnas Electric Co., 1041 McKee St., Batavia, Ill.

G

G. M. Mfg. Co., 134 W. 26th St., New York, N. Y.
G & O Mfg. Co., 138 Winchester Ave., New Haven 8, Conn.
Gabriel Boiler Co., 1428 N.W. 14th Ave., Portland, Ore.
Gallaher Co., The, 4108 Dodge St., Omaha 3, Neb.
Galloway Co., G. W., Cooling Tower Div., 220 So. First Ave., Arcadia, Calif.
Gamon Meter Div., Worthington Corp., 296 South St., Newark, N. J.
Gannon Co., Russell R., 5535 Vine St., Cincinnati 12, O.
Gannon Heating & Ventilating Div., Ward LaFrance Truck Corp., Grand Central Ave., Elmira, N. Y.
Garden City Fan Co., 801 N. Eighth St., Niles, Mich.
Garden City Instruments, Inc., 608 S. Dearborn St., Chicago 5, Ill.
Gardiner Electronics Co., 2545 E. Indian School Rd., Phoenix, Ariz.
Gardiner Metal Co., 4820 So. Campbell Ave., Chicago 32, Ill.
Gardner-Denver Co., Quincy, Ill.
Garlock Packing Co., The, 402 Main St., Palmyra, N. Y.
Garman Co., Inc., The, 1253 Grover Rd., St. Louis 23, Mo.
Gas Machinery Co., 16100 Waterloo Rd., Cleveland 10, O.
Gas & Oil Industry Laboratories, Inc., 4 Paine Ave., Irvington, N. J.
Gasoilair Equipment Co., P. O. Box 768, New Haven, Conn.
Gates Engineering Co., 100 S. West St., Wilmington 99, Del.
Gates Rubber Co., The, 999 S. Broadway, Denver 17, Colo.
Gateway Engineering Co., 3233 W. Grand Ave., Chicago, Ill.
Gatke Corp., 228 N. LaSalle St., Chicago 1, Ill.
Gato Valve Co., 912-916 Behan St., Pittsburgh 33, Pa.
Gavitt Wire & Cable Co., Div. of Amerace Corp., 100 Central St., Brookfield, Mass.
Gelber & Sons, Inc., S., 5806 N. Lincoln Ave., Chicago 45, Ill.
Gelman Instrument Co., 233 Jefferson St., Chelsea, Mich.
Gel-Me Co., P. O. Box 293, Bloomington, Ill.
Gem Clay Forming Co., P. O. Box 500, Sebring, O.
Gen-A-Matic Corp., 14741 Bessemer St., Van Nuys, Calif.
General Air Conditioning Corp., 4542 E. Dunham St., Los Angeles, Calif.
General Air Products Corp., 14-40 Factory St., Cedar Grove, N. J.
General Alliance Corp., 2105 Moore St., San Diego 1, Calif.
General Aluminum Supply Co., 1506 Eastern, Kansas City, Mo.
General-American Valve Co., P. O. Box 444, Corona Del Mar, Calif.
General Automatic Products Corp., 2300 Sinclair Lane, Baltimore 13, Md.
General Blower Co., 8610 Ferris Ave., Morton Grove, Ill.
General Blower Co., 6412 Girard Ave., Philadelphia 31, Pa.
General Ceramics Corp., Crows Mill Road, Keasbey, N. J.
General Chemical Div., Allied Chemical Corp., 40 Rector St., New York.
General Controls Co., 801 Allen Ave., Glendale 1, Calif. and Skokie, Ill.
General Electric Co., Air Conditioning Dept., Tyler, Texas.
General Electric Co., Apparatus Sales Div., 1 River Rd., Schenectady 5, N. Y.
General Electric Co., Appliance Control Dept., Morrison, Ill.
General Electric Co., Appliance & Television Receiver Div., Appliance Park, Louisville 1, Ky.
General Electric Co., Capacitor Dept., Ft. Edward, N. Y.
General Electric Co., Chemical Materials Dept., 1 Plastics Ave., Pittsfield, Mass.
General Electric Co., Construction Materials Div., 1285 Boston Ave., Bridgeport 2, Conn.
General Electric Co., Laminated Products Dept., Coshocton, O.
General Electric Co., Large Lamp Dept., Nela Park, Cleveland 12, O.
General Electric Co., Small Steam Turbine Dept., 166 Broad St., Fitchburg, Mass.
General Electric Co., Wiring Device Dept., 95 Hathaway St., Providence 7, R. I.
General Electric Co., X-Ray Dept., 4855 W. Electric Ave., Milwaukee, Wis.
General Filter Co., 923 Second St., Ames, Ia.
General Filters, Inc., 43800 Grand River, Novi, Mich.
General Fittings Co., P. O. Box 151, East Greenwich, R. I.
General Gas Light Co., 202 N. Park, Kalamazoo 11F, Mich.
General Heating Products Co., 7426 State Rd., Philadelphia 36, Pa.
General Machine & Mfg. Co., Blair St. & Spring Garden Ave., Berwick, Pa.
General Metals, Inc., 858 Goldsboro St., P. O. Box 448, Greensboro, N. C.
General Paint Corp., 2627 Army St., P. O. Box 3474, San Francisco.
General Plate Div., Metals & Controls Corp., 34 Forest St., Attleboro, Mass.
General Products Co., Inc., Fredericksburg, Va.

General Rubber Corp., Summit & Atwood St., Tenafly, N. J.
General Scientific Equipment Co., P. O. Box 3038, Philadelphia 50, Pa.
General Sound Control, Inc., 6711 S. Sepulveda Blvd., Los Angeles, Calf.
General Tire & Rubber Co., 444 Tacoma Ave., Logansport, Ind.
General Tire & Rubber Co., 1708 Englewood, Akron, O.
General Tire & Rubber Co., Industrial Products Div., Wabash, Ind.
Geneva Mfg. Co., N. Woodbury Rd., South Elgin, Ill.
Genie-Air, 4273 S. Broadway, Los Angeles, Calif.
Gerett Corp., M. A., 724 W. Winnebago St., Milwaukee 5, Wis.
Germatrol Corp., 7025 Chaucer St., Pittsburgh 8, Pa.
Gerrard & Co., A. J., 1950 Hawthorne Ave., Melrose Park, Ill.
Gerry Tool Co., 135 Terryville Rd., Bristol, Conn.
Gerwin Industries, Inc., 214 Spring St., Michigan City, Ind.
Giannini & Co., Inc., G. M., 918 E. Green St., Pasadena, Calif.
Giant Mfg. Co., 6th St. & 12th Ave., Council Bluffs, Ia.
Gibson-Homans Co., 2366 Woodhill Rd., Cleveland 6, O.
Gibson Refrigerator Co., Greenville, Mich.
Gilbert & Barker Mfg. Co., West Springfield, Mass.
Gilbert Brass Foundry Co., 5028 Farlin St., St. Louis, Mo.
Gilbreth Co., The, 1211 Chestnut St., Philadelphia 7, Pa.
Gisholt Machine Co., 1253 E. Washington Ave., Madison 10, Wis.
Glidden Co., The, 900 Union Commerce Blvd., Cleveland 14, O.
Glidden Co., Nubian Div., 1857 N. LeClaire, Chicago 39, Ill.
Globe Phone Mfg. Co., 2 Linden St., Reading, Mass.
Globe Products, Huppower Div., Hupp Corp., 7450 Melville Ave., Detroit 17, Mich.
Glo-Brite Products, 6415 N. California Ave., Chicago 45, Ill.
Goder, Inc., Joseph, 4241 N. Honore St., Chicago 13, Ill.
Goder Incinerator Corp., 13920 S. Western Ave., Blue Island, Ill.
Goethel Sheet Metal Wks., Inc., Alfred, 3218 W. Fond du Lac Ave., Milwaukee 10, Wis.
Gold Top Heating, Inc., 330 Del Mar Pl., P. O. Box 2, San Gabriel, Calif.
Golden Anderson Valve Specialty Co., 1232 Ridge Ave., Pittsburgh 33.
Goldens' Foundry & Machine Co., Columbus, Ga.
Goodall Rubber Co., 441 Whitehead Rd., Trenton, N. J.
Goodfellow Co., Inc., E. D., 496 E. Bodley Ave., Memphis, Tenn.
Goodrich Co., B. F., Shelton, Conn.
Goodrich Chemical Co., B. F., 3135 Euclid Ave., Cleveland 15, O.
Goodrich Industrial Products Co., B. F., Akron, O.
Goodrich Industrial Products Co., B. F., Koroseal Div., Marietta, O.
Goodyear Tire & Rubber Co., 1144 E. Market St., Akron 16, O.
Goodwill Mfg. Co., 1213 S. Laramie, Chicago 50, Ill.
Gordon & Piatt, Inc., P. O. Box 914, Winfield, Kan.
Gorman-Rupp Co., 305 Bowman St., Mansfield, O.
Gorton Heating Corp., Cranford, N. J.
Goss Gas Inc., P. O. Box 57, Glenshaw, Pa.
Gould Co., J. D., 4707 Massachusetts Ave., Indianapolis 18, Ind.
Goulds Pumps, Inc., Fall St., Seneca Falls, N. Y.
Governair Corp., 4840 North Sewell, Oklahoma City 4, Okla.
Governale Bros., Inc., 5518 Ave., N., Brooklyn, N. Y.
Grabler Mfg. Co., 6565 Broadway, Cleveland 5, O.
Grace & Co., W. R., Davison Chemical Div., 101 N. Charles St., Baltimore 3, Md.
Graham Mfg. Co., Inc., 415 Lexington Ave., New York 17, N. Y.
Graham Mfg. Corp., New England Ind. Ctr., 152 Second Ave., Needham Hts. 94, Mass.
Graham Transmissions, Inc., Menomonee Falls, Wis.
Granberg Corp., 1308 67th St., Oakland 8, Calif.
Granite City Steel Co., 20th & Madison Ave., Granite City, Ill.
Grant Wilson, Inc., 141 W. Jackson Blvd., Suite 1560, Chicago, Ill.
Graphic Calculator Co., 633 Plymouth Ct., Chicago 5, Ill.
Graphic Indicator Co., 1739 S. La Cienega Blvd., Los Angeles 35, Calif.
Graton & Knight Co., 356 Franklin St., Worcester 4, Mass.
Graver Water Conditioning Co., 216 W. 14th St., New York 11, N. Y.
Gray Co., Inc., 56 - 11th Ave., N. E., Minneapolis 13, Minn.
Gray Pantograph Engraving Co., 200 Washington St., Hoboken, N. J.
Gray Tool Co., P. O. Box 2291, Houston, Tex.
Great Northern Mfg. Corp., 1056 N. Wood St., Chicago 22, Ill.
Great Western Steel Co., 2300 West 58th, Chicago 36, Ill.
Green Fire Brick Co., A. P., Mexico, Mo.
Green Fuel Economizer Co., Inc., The, 780 Main St., Beacon, N. Y.
Green Instruments, Inc., Henry J., 2500 Shames Dr., Westbury, N. Y.
Greene, Tweed & Co., North Wales, Pa.
Greenfield Tap & Die Div. of United Greenfield Corp., Sanderson St., Greenfield, Mass.
Greenheck Fan & Ventilator Corp., Schofield, Wis.
Greenlee Tool Co., Div. of Greenlee Bros. & Co., 2136 12th St., Rockford, Ill.
Greenville Tubes, Inc., P. O. Box 30, Greenville, Pa.
Greenwood Valve Div. of Vernon Tool Co., Ltd., 1101 Meridian Ave., Alhambra, Calif.
Greer Hydraulics, Inc., N. Y. International Airport, Jamaica 30, N. Y.
Griffin & Co., 500 Bergman Ave., Louisville 8, Ky.
Griffith Equipment Co., Inc., 4503 Alger St., Los Angeles 39, Calif.
Grinnell Co., Inc., 260 W. Exchange St., Providence 1, R. I.
Griphoist, Inc., 424 Bryant St., San Francisco 7, Calif.
Grip Nut Co., South Whitley, Ind.
Griscom-Russell Co., The, Massillon, O.
Gross-Aire Mfg. Co., 9416 W. Milton Ave., Overland 14, Mo.
Grove Valve and Regulator Co., 65th & Hollis St., Oakland, Calif.
Guard Coatings Corp., 8-05 43rd Ave., Long Island City 1, N. Y.
Guardian Electric Mfg. Co., 1621 W. Walnut St., Chicago 12, Ill.
Guardian Products Corp., 1215 E. 2nd St., Michigan City, Ind.
Gulf Oil Corp., P. O. Box 1166, Gulf Bldg., Pittsburgh 30, Pa.
Gustin-Bacon Mfg. Co., 210 W. 10th St., Kansas City 6, Mo.

H

H. A. Mfg. Co., 1612 W. King St., York, Pa.
H-B Instrument Co., American & Bristol Sts., Philadelphia 40, Pa.
H & H Tube & Mfg. Co., 245-275 N. Forman Ave., Detroit 17, Mich.
H & M Pipe Beveling Machine Co., 311 East 3rd, Tulsa, Okla.
H-P Products, Inc., 514 W. Gorgas St., Louisville, O.
Hadley Products Co., Inc., Marietta, O.
Haertel Co., Walter, 2840 4th Ave., S., Minneapolis, Minn.
Hagan Chemicals & Controls, Inc., Rt. 60 at Campbell's Run Rd., P. O. Box 1346, Pittsburgh 30, Pa.
Hager Bros., East P. O. Box 1511, Rockford, Ill.
Hague & Co., Inc., Alfred, Div. of Lacquer & Chemical Corp., 214 40th St., Brooklyn 32, N. Y.
Haines & Co., Inc., Wm. S., Div. Sellers Injector Corp., 1600 Hamilton St., Philadelphia 30, Pa.
Hall Laboratories, Hagan Bldg., Pittsburgh 30, Pa.
Halstead & Mitchell, Bessemer Bldg., Pittsburgh 22, Pa.
Hamburg Boiler Wks., Inc., Grand St., Hamburg, Pa.
Hamer-Dril Co., 512 Greenwich St., New York 13, N. Y.
Hamer Valves, Inc., 2919 Gardenia Ave., Long Beach 6, Calif.
Hamilton Div., Baldwin-Lima-Hamilton Corp., Hamilton, O.
Hamilton Fan & Blower Co., Inc., 2650 Colerin Ave., Cincinnati, O.
Hamilton Rubber Mfg. Corp., Meade St., Trenton 3, N. J.
Hamlin Co., Inc., J. F., 746 Ellis St., San Francisco 9, Calif.
Hammel-Dahl, Div. of General Controls Co., Warwick Industrial Park, Warwick, R. I.
Hammett Electric Mfg. Co., 209 W. 19th Terrace, Kansas City 8, Mo.
Hammond Machinery Builders, Inc., 1600 Douglas, Kalamazoo, Mich.
Hammond Valve Corp., 1844 Summer Blvd., Hammond, Ind.
Hampton-Cross Co., The, 120 S. 10th St., Louisville 2, Ky.
Handy Angle Div., The Lugall Co., Haverford, Pa.
Handy & Harman, 82 Fulton St., New York 38, N. Y.
Haney Burner Div., Southwest Gas Corp., Box 271, Las Vegas, Nev.
Hanna Engineering Wks., 1767 N. Elston, Chicago 22, Ill.
Hannifin Corp., 501 S. Wolf, DesPlaines, Ill.
Hanovia Lamp Div., Engelhard Industries, Inc., 100 Chestnut St., Newark 5, N. J.
Hansen Mfg. Co., Inc., Princeton 15, Ind.
Hansson, Inc., Elof, Acoustical Div., 711 3rd Ave., New York 17, N. Y.
Harco Corp., Cathodic Protection Div., 4600 E. 71st St., Cleveland 25, O.
Hardinge Oil Burner & Mfg. Co., 1770 Berteau St., Chicago 13, Ill.
Harman Equipment Co., 3605 East Olympic Blvd., Los Angeles 23, Calif.
Harmond Company, 2114 Woodlawn, Cleveland 2, O.
Harnischfeger Corp., 4400 W. National Ave., Milwaukee 46, Wis.
Harold Electric Co., 210 E. Alder, Walla Walla, Wash.
Harper Co., H. M., 8388 Lehigh Ave., Morton Grove, Ill.
Harrington & King Perforating Co., Inc., 5655 Fillmore St., Chicago 44, Ill.
Harris Calorific Co., The, 5501 Cass Ave., N. W., Cleveland 2, O.
Harris & Co., Arthur, 210 N. Aberdeen St., Chicago 7, Ill.
Harrisburg Steel Co., Div. of Harsco Corp., 10th & Herr Sts., Harrisburg, Pa.
Harrison Radiator Div., General Motors, Lockport, N. Y.
Harrison Sheet Steel Co., 4718 W. 5th St., Chicago 44, Ill.
Harrison Steel Corp., 200 Greenpoint Ave., Brooklyn 22, N. Y.
Hart & Cooley Mfg. Co., Holland, Mich.
Hart Mfg. Co., The, 116 Bartholomew Ave., Hartford 1, Conn.
Hartmann Co., Chas., 985 Dean St., Brooklyn 38, N. Y.
Hartzell Propeller Fan Co., P. O. Box 909, Roosevelt Ave., Piqua, O.
Harvey Aluminum, 19200 S. Western Ave., Torrance, Calif.
Haskel Engineering & Supply Co., 1236 S. Central Ave., Glendale, Calif.
Haskell Mfg. Co., Wm. H., 24 Commerce St., Pawtucket, R. I.
Hastings Air Control, Inc., 3215 Leavenworth St., Omaha, Nebr.
Hastings-Raydist, Inc., Hampton, Va.
Hauck Mfg. Co., 126-136 10th St., Brooklyn 15, N. Y.
Haveg Industries, Inc., 900 Greenbank Rd., Wilmington 8, Del.
Havens Cooling Tower, Div. of Havens Structural Steel Co., 1713 Crystal Ave., Kansas City, Mo.
Haydon Co., A. W., The, 232 N. Elm, Waterbury, Conn.
Haydon Mfg. Co., Inc., Sub. General Time Corp., Torrington, Conn.
Hayes Furnace Mfg. & Supply Co., 3233 South LaCienega Blvd., Los Angeles 16, Calif.
Haynes Stellite Co., Div. of Union Carbide Corp., 30 E. 42nd St., New York 17, N. Y.
Hays Corp., The, 800 E. 8th St., Michigan City 14, Ind.
Hays Mfg. Co., 801 W. 12th St., Erie, Pa.
Healey Co., Lee, 554 W. Garfield, Glendale 4, Calif.
Healy Ruff Co., 2257 University Ave., St. Paul 14, Minn.
Heat-Exchangers, Inc., 2003 W. Fulton St., Chicago, Ill.
Heat More Tankless Heater Co., 1974 Massachusetts Ave., Cambridge, Mass.
Heatmore, Inc., 651-5 Driggs Ave., Brooklyn 11, N. Y.
Heat & Power Corp., 424 E. Saratoga St., Baltimore 2, Md.
Heat-Timer Corp., 657 Broadway, New York 12, N. Y.
Heat Transfer Products, Inc., Park Ave., Perkasie, Pa.
Heat Transmission Conduit Co., 2300 Payne Ave., Rm. 503, Cleveland 14, O.
Heatron, Inc., 333 Eberts Lane, York, Pa.
Heat-X, Inc., Subsidiary of Dunham-Bush, Inc., West Hartford, Conn.
Heating Assurance, Inc., 124 E. Augusta St., Spokane 21, Wash.
Heil Process Equipment Corp., 12901 Elmwood Ave., Cleveland 11.
Hein-Werner Corp., 1200 National Ave., Waukesha, Wis.
Heinemann Electric Co., 497 Plum St., Trenton 2, N. J.
Helicoid Gage Div., American Chain & Cable Co., Inc., Bridgeport 3, Conn.
Heller Laboratories, Inc., 124 Fort Lee Rd., Leonia, N. J.
Helmco, Inc., 7400 W. Lawrence Ave., Chicago 31, Ill.
Henderer's Sons, A. L., 689 Maryland Ave., Wilmington 99, Del.
Hendley & Whittemore, 6 Blackhawk Blvd., Beloit, Wis.
Hendrick Mfg. Co., 37 Dundaff St., Carbondale, Pa.

Henry Furnace Co., The, Medina, O.
Henry Valve Co., 3215 North Ave., Melrose Park, Ill.
Henszey Co., 202½ N. Water St., Watertown, Wis.
Herbusch Corp., The, 706 Chestnut St., 210 Title Guaranty Bldg., St Louis 1, Mo.
Hercules Chemical Co., Inc., 416 Broadway, New York 13, N. Y.
Hercules Powder Co., Wilmington, Del.
Hercules Power Equipment Co., P. O. Box 49724, Barrington Station, Los Angeles 49, Calif.
Heresite & Chemical Co., Manitowoc, Wis.
Herman Nelson Products, American Air Filter Co., Inc., 215 Central Ave., Louisville 8, Ky.
HERRmidifier Co., P. O. Box 145, Neffsville, Pa.
Hersey Mfg. Co., 250 Elm St., Dedham, Mass.
Hershey Motorstokor, Manheim, Pa.
Hertner Electric Co., The, 12690 Elmwood Ave., Cleveland 11, O.
Hetherington & Berner, Inc., 747 Kentucky Ave., Indianapolis 7, Ind.
Hewitt-Robins Inc., 666 Glenbrook Rd., Stamford, Conn.
Hexdall Co., A. M., Morris, Ill.
Highside Chemicals, Inc., 10-14 Colfax Ave., Clifton, N. J.
Hi-Grade Alloy Corp., 1236 S. Talman, Chicago 8, Ill.
Hill Co., Francis, 5403 Prospect Ave., Cleveland 3, O.
Hill & Co., E. Vernon, P. O. Box 189, Lake Geneva, Wis.
Hill, Hubbell & Co., 3091 Mayfield Rd., Cleveland 18, O.
Hill, Inc., Walter P., 22183 Telegraph Rd., Detroit 19, Mich.
Hill Pump Valve Co., 2728 N. Elston Ave., Chicago, Ill.
Hilliard Corp., 100 W. 4th St., Elmira, N. Y.
Hills-McCanna Co., 3025 N. Western Ave., Chicago 18, Ill.
Hi-Lo Mfg. Co., 2853 Columbus Ave., Minneapolis, Minn.
Hilo Varnish Corp., Div. of Carpenter-Morton Co., 376 Third St., Everett 49, Mass.
Hilti Rapid Fastening Systems, Inc., 73 Southfield Ave., Stamford, Conn.
Hinde & Dauch Paper Co., P. O. Box 861, Sandusky, O.
Hindle Transformer Co., Inc., Woods Church Rd., Flemington, N. J.
Hirschman-Pohle Co., Inc., 12 Lent Ave., LeRoy, N. Y.
Hite Mfg. Co., N. E., 303 North Elizabeth St., Chicago 7, Ill.
Hobart Bros. Co., Hobart Square, Troy 1, O.
Hodge Boiler Wks., 99-111 Sumner St., East Boston 28, Mass.
Hodgman Mfg. Co., Inc., 135 Washington St., Taunton, Mass.
Hoff Mfg. Co., Johnson Rd., Bethany, New Haven 15, Conn.
Hoffman Combustion Engrg. Co., 1780 Southfield Rd., Lincoln Park, Mich.
Hoffman Specialty Mfg. Corp., 1700 W. 10th St., Indianapolis 7, Ind.
Hofmann Engineering Co., 5601 S. Crawford Ave., Chicago 29, Ill.
Hogart Engineering Co., 1050 S. Oliver St., Los Angeles, Calif.
Holby Tempering Valve Co., Inc., 1146 Second Ave., New York 21, N. Y.
Hollaender Mfg. Co., 3841 Spring Grove Ave., Cincinnati 23, O.
Hollands Mfg. Co., Erie, Pa.
Holsclaw Bros., Inc., 408 N. Willow Rd., Evansville 11, Ind.
Holtzer-Cabot Electric Motor Div., National Pneumatic Co., Inc., 125 Armory St., Boston 19, Mass.
Holub Industries, Inc., Sycamore, Ill.
Homestead Valve Mfg. Co., P. O. Box 348, Coraopolis, Pa.
Hoover Ball & Bearing Co., Ann Arbor, Mich.
Hoppes Mfg. Co., Inc., 301 N. Greenmount Ave., Springfield, O.
Horn Companies, A.C., Subsidiary of Sun Chemical Corp., 750 3rd Ave., New York 17, N. Y.
Horton Mfg. Co., 1179 15th Ave., Minneapolis 14, Minn.
Hossfeld Mfg. Co., 460 W. Third St., Winona, Minn.
Hotpoint Co., 5600 W. Taylor St., Chicago 44, Ill.
Hotstream Heater Co., 2363 E. 69th St., Cleveland 4, O.
Houghton & Co., E. F., 303 W. Lehigh Ave., Philadelphia 33, Pa.
Howard Industries, Inc., Racine, Wis.
Howe Ice Machine Co., 2825 Montrose Ave., Chicago 18, Ill.
Howell Electric Motors Co., Howell, Mich.
Howes-Woods Co., 201 Bridge St., Cambridge, Mass.
Hubbell Corp., P. O. Box 700, Hawley Rd., Mundelein, Ill.
Huck Mfg. Co., 2480 Bellvue, Detroit, Mich.
Hudson Engineering Corp., P. O. Box 6158, Houston 6, Tex.
Hudson Industries, Inc., 4400 St. Aubin Ave., Detroit 7, Mich.
Hudson Mfg. Co., H. D., 589 E. Illinois St., Chicago 11, Ill.
Humboldt Mfg. Co., 2016 N. Whipple St., Chicago, Ill.
Hungerford & Terry, Inc., Clayton, N. J.
Hunt & Son, Inc., C. B., Salem, O.
Hunt Spiller Mfg. Corp., 383 Dorchester Ave., Boston, Mass.
Hunter Div., Robbins & Myers, Inc., 2500 Frisco Ave., Memphis, Tenn.
Hunter Douglas Aluminum Div., Bridgeport Brass Co., 405 Lexington Ave., New York 17, N. Y.
Hunter Mfg. Co., Aluminum Insulation Div., Bristol, Pa.
Hussey & Co., C. G., Div. of Copper Range Co., 2850 Second Ave., Pittsburgh 19, Pa.
Huyette Co., Inc., Paul B., 401 N. Broad St., Philadelphia 8, Pa.
Hyatt Bearings Div., General Motors Corp., Harrison, N. J.
Hydrauger Corp., Ltd., 681 Market St., San Francisco 5, Calif.
Hydraulic Mfg. Co., 138 Hurd Ave., Bridgeport 4, Conn.
Hydromation Corp., 900 W. Erie St., Chicago 22, Ill.
Hydronic Co., The, 12685 Arnold Ave., Detroit 39, Mich.
Hydrotherm, Inc., Clinton Ave., Northvale, N. J.
Hydrozion Engineering Co., Inc., 2003 Indiana Ave., Kansas City 27, Mo.
Hynes Electric Heating Div., Turbine Equipment Co., P. O. Box 578, Westfield, N. J.

I

I. W. Air Conditioning Corp., 230 Manida St., New York 59, N. Y.
Ideal Corp., 435 Liberty Ave., Brooklyn 7, N. Y.
Ideal Electric & Mfg. Co., E. First & Oak Sts., Mansfield, O.
Ideal Industries, Inc., 1096 Parke Ave., Sycamore, Ill.
Ilg Electric Ventilating Co., 2841 N. Pulaski Rd., Chicago 41, Ill.
Illinois Bronze Powder Co., 2015 S. Clark St., Chicago 16, Ill.
Illinois Engineering Products, American Air Filter Co., Inc., 215 Central Ave., Louisville 8, Ky.
Illinois Malleable Iron Co., 1701 Wellington, Chicago 13, Ill.
Illinois Oil Products, Inc., 4th Ave. and 24th St., Rock Island, Ill.
Illinois Testing Laboratories, Inc., 420 N. La Salle St., Chicago 10.
Illinois Water Treatment Co., 840 Cedar St., Rockford, Ill.
Illinois Zinc Co., Div. of Hydrometals, Inc., 2959 W. 47th St., Chicago 32, Ill.
Imeco, Inc., 3033 W. Belmont Ave., Chicago 18, Ill.
Imperial Brass Mfg. Co., 6300 W. Howard St., Chicago 48, Ill.
Imperial Chemicals Corp., 6505 Wilshire Blvd., Los Angeles 48, Calif.
Imperial Damper Co., 664 Edgecombe Ave., New York 32, N. Y.
Imperial Electric Co., 64 Ira Ave., Akron, O.
Imperial Oil & Grease Co., Inc., 6505 Wilshire Blvd., Los Angeles 48, Calif.
Incinerator Corp. of America, 33220 Lakeland Blvd., Eastlake, O.
Incinerator Products Co., 633 S. Post Ave., Detroit, Mich.
Independent Blade Corp., P. O. Box 1482, Joliet, Ill.
Independent Register Co., 3747 E. 93rd St., Cleveland 5, O.
Indus Corp., 1815 Madison Ave., Indianapolis 25, Ind.
Industrial Balancing Engrs. Div., Calkins Machine & Tool Wks., East Main, E. Aurora, N. Y.
Industrial Combustion, Inc., 4507 N. Oakland Ave., Milwaukee, Wis.
Industrial Development Laboratories, Inc., 17 Pollock Ave., Jersey City 5, N. J.
Industrial Engineering Corp., 525 E. Woodbine, Louisville, Ky.
Industrial Engineering & Equipment Co., 24 Hanley Industrial Ct., St. Louis (Brentwood), Mo.
Industrial Filter & Pump Co., 5900 W. Ogden Ave., Chicago 50, Ill.
Industrial Finishes Co., Inc., 1119 Land Title Bldg., Broad & Chestnut Sts., Philadelphia 10, Pa.
Industrial Laminates Div., Fabric Distributing Co., 42 White St., New York 13, N. Y.
Industrial Metal Protectives, Inc., 401 Homestead Ave., Dayton 8, O.
Industrial Plastic Fabricators, Endicott St., Norwood, Mass.
Industrial Plastics Fittings Co., 11 West Pennsylvania Ave., Towson, Md.
Industrial Products Co., 2666 N. Fourth St., Philadelphia 33, Pa.
Industrial Screw Co., 4920 W. Madison, Chicago 44, Ill.
Industrial Sheet Metal Work, 3155 N. Halsted St., Chicago 14, Ill.
Industrial Sound Control, Dept. of Koppers Co., Inc., Metal Products Div., 200 Scott St., Baltimore 3, Md.
Industrial Tape Div., Hampton Mfg. Co., 111 Cedar St., New Rochelle, N. Y.
Industrial Tubular Equipment Co., 12906 Saticoy St., North Hollywood, Calif.
Infilco, Inc., P. O. Box 5033, Tucson, Ariz.
Infra Insulation, Inc., 525 Broadway, New York, N. Y.
Ingersoll Conditioned Air Div., Borg-Warner Corp., 760 E. Vine St., Kalamazoo, Mich.
Ingersoll-Rand Co., 11 Broadway, New York 4, N. Y.
Ingersoll Steel Div., Borg-Warner Corp., 310 S. Michigan Ave., Chicago 4, Ill.
Inland Heater Corp., 3402 University S.E., Minneapolis, Minn.
Inland Steel Co., 30 W. Monroe St., Chicago 3, Ill.
Inland Steel Products Co., 4029 W. Burnham St., Milwaukee 1, Wis.
Inner-Tite Div. of Yara Engineering Corp., 18 W. Jersey St., Elizabeth 4, N. J.
Insto-Gas Corp., 998 E. Woodbridge St., Detroit 7, Mich.
Instrument Cases, Div. of TA Mfg. Corp., 4607 Alger St., Los Angeles 39, Calif.
Instrument Div., Robertshaw-Fulton Controls Co., 2920 N. 4th St., Philadelphia 33, Pa.
Instruments, Inc., P. O. Box 556, Tulsa, Okla.
Insul-Coustic, Inc., 42-23 54th Rd., Maspeth, Long Island, N. Y.
Insul-Fil Co., Inc., Div. of Miracle Adhesives Corp., 250 Pettit Ave., Bellmore, Long Island, N. Y.
Insulite Div. Minnesota and Ontario Paper Co., 500 Investors Bldg., Minneapolis 2, Minn.
Insul-Mastic Corp. of America, 7750 W. 61st Place, Summit, Ill.
Integral Corp., 100 Frank Road, Hicksville, Long Island, N. Y.
Inter-Coastal Paint Corp., 13th St. and Southern R. R., East St. Louis Ill.
Interchemical Corp., Finishes Div., 224 McWhorter St., Newark 1.
International Aer Acoustics, 341 Jackson Ave., New York 54, N. Y.
International Boiler Works Co., The, 5 Birch St., East Stroudsburg, Pa.
International Business Machines Corp., 590 Madison Ave., New York 22, N. Y.
International Covers for Air Conditioners Corp., 532 Broadway, New York, N. Y.
International Engineering, Inc., 1145 Bolander Ave., Dayton 1, O.
International Forge Co., 2308 S. Kedzie, Chicago, Ill.
International Harvester Co., 180 N. Michigan Ave., Chicago 1, Ill.
International Heater Co., 101 Park Ave., Utica 2, N. Y.
International Mfg. Co., 600 E. Grand Ave., Oklahoma City, Okla.
International Metal Hose Co., Ashford Ave., Bellevue, O.
International Metal Products Co., P. O. Box 1712, Phoenix, Ariz.
International Nickel Co., Inc., The, 67 Wall St., New York 5, N. Y.
International Powder Metallurgy Inc., Ridgway, Pa.
International Register Co., 2620 W. Washington Blvd., Chicago 12, Ill.
International Vermiculite Co., Girard, Ill.
Interstate Heater Mfg. Co., 2627 West 6th Ave., Denver, Colo.
Iona Ventilator Co., Inc., 2821-29 W. Dauphin St., Philadelphia 32.
Ionaire, Inc., 390 First St., San Francisco 5, Calif.
Iron Fireman Mfg. Co., 3170 W. 106 St., Cleveland 11, O.
Iron Lung Ventilator Co., 5403 Prospect Ave., Cleveland 3, O.

Irvington Div., Minnesota Mining & Mfg. Co., 6 Argyle Terrace, Irvington 11, N. J.
Iwan Brothers, Inc., 1503 Prairie Ave., South Bend 14, Ind.

J

Jabsco Pump Co., 2031 Lincoln St., Burbank, Calif.
Jack & Heintz, Inc., 17600 Broadway, Cleveland 1, O.
Jackes-Evans Mfg. Co., Controls Div., 4427 Geraldine Ave., St. Louis 15, Mo.
Jackson & Church Co., 321 N. Hamilton Ave., Saginaw 65, Mich.
Jackson-Marcus Supply Co., 3612 E. 26th St., Los Angeles 24, Calif.
Jaco Devices Co., 100 High St., Hingham, Mass.
Jaco Manufacturing Co., 9231 Clinton Ave., Cleveland 9, O.
James Mfg. Co., 104 N. Milwaukee Ave., Ft. Atkinson, Wis.
Jamesbury Corp., 45 New St., Worcester 5, Mass.
Jamieson Mfg. Co., 517 Bedford St., Dallas 12, Tex.
Jan-Air, Inc., Richmond, Ill.
Janette Elect. Mfg. Co., Lehigh at Main, Morton Grove, Ill.
Janitrol Heating & Air Conditioning Div., Surface Combustion Corp., 400 Dublin Ave., Columbus, O.
Jarrow Products, 420 N. LaSalle, Chicago 10, Ill.
Jefferson Electric Co., 25th & Madison St., Bellwood, Ill.
Jefferson Union Co., 31 Fletcher Ave., Lexington 73, Mass.
Jeffrey Mfg. Co., 859 N. Fourth St., Columbus 16, O.
Jemco Tool Corp., 22 State St., Seneca Falls, N. Y.
Jenkins Bros., 100 Park Ave., New York 17, N. Y.
Jenn-Air Products Co., 1102 Stadium Drive, Indianapolis 7, Ind.
Jennison Co., The, 87 Putnam St., Fitchburg, Mass.
Jessop Steel Co., Washington, Pa.
Jet-Lube, Inc., 3093 N. California St., Burbank, Calif.
Jewel Mfg. Co., 1841 University Ave., St. Paul 4, Minn.
Johns-Manville, 22 E. 40th St., New York 16, N. Y.
Johnson Bronze Co., 460 S. Mill St., New Castle, Pa.
Johnson Co., S. T., 940 Arlington Ave., Oakland 8, Calif.
Johnson Corp., The, 806 Wood St., Three Rivers, Mich.
Johnson Degree Day Systems, 329 S. Pitcher St., Kalamazoo, Mich.
Johnson Gas Appliance Co., 520 "E" Ave., N. W., Cedar Rapids, Ia.
Johnson Heater Corp., 1 Winnisimet St., Chelsea, Mass.
Johnson Machine Works, 619 Menomonie St., Eau Claire, Wis.
Johnson Mfg. Co., Inc., Mt. Vernon, Ia.
Johnson-March Corp., 1724 Chestnut St., Philadelphia 3, Pa.
Johnson Metal Hose, Inc., 10 Sperry St., Waterbury 20, Conn.
Johnson Plastics Corp., Box 100, Chagrin Falls, Ohio.
Johnson Service Co., 507 E. Michigan St., Milwaukee 1, Wis.
Johnson-Williams Inc., 2625 Park Blvd., Palo Alto 24, Calif.
Johnston Bros., Inc., Ferrysburg, Mich.
Johnston & Chapman Co., 2925 Carroll Ave., Chicago 12, Ill.
Johnston Foil Mfg. Co., 6100 S. Broadway, St. Louis 11, Mo.
Johnston & Jennings Co., 6917 Bessemer Ave., Cleveland 27, O.
Johnston Pump Co., A Div. of the Youngstown Sheet & Tube Co., P. O. Bin "K", Pasadena 15, Calif.
JO-Line Tools, Inc., 8442 Otis St., South Gate, Calif.
Jones & Laughlin Steel Corp., 3 Gateway Center, Pittsburgh 30, Pa.
Jones & Laughlin Steel Corp., Stainless Steel Div., Box 4606, Detroit, Mich.
Jones Machinery Div., Hewitt-Robins, Inc., 4401 Roosevelt Rd., Chicago.
Jordan & Co., Inc., Paul R., 311 E. South St., Indianapolis 25, Ind.
Jordan Corp., Div. of OPW Corp., 6013 Wiehe Rd., Cincinnati 13, O
Josam Manufacturing Co., Corymbo Rd., Michigan City, Ind.
Joy Mfg. Co., Dept. 20, Henry W. Oliver Bldg., Pittsburgh 22, Pa.
Justrite Mfg. Co., 2061 N. Southport Ave., Chicago 14, Ill.

K

K-G Equipment Co., 1744 Lehigh St., Allentown, Pa.
KSM Products, Inc., Yale & Woodland Ave., Merchantville, N. J.
Kaiser Aluminum & Chemical Sales, Inc., Palmolive Bldg., 919 N. Michigan, Chicago, Ill.
Kaiser Co., E. B., 2114 W. Lake Ave., P. O. Box 47, Glenview, Ill.
Kalamazoo Div., New York Air Brake Co., Kalamazoo, Mich.
Kalamazoo Tank & Silo Co., Machine Tool Div., 500 Harrison St, Kalamazoo 16, Mich.
Kam Products Corp., 245 Alabama Ave., Brooklyn, N. Y.
Kane Mfg. Corp., Kane, Pa.
Kass Hardware & Supply Co., Inc., 443 East Tremont Ave., Bronx 57, N. Y.
Kates Co., W. A., The, 430 Waukegan Rd., Deerfield, Ill.
Kato Engineering Co., 1415 First Ave., Mankato, Minn.
Kaufman Co., H. J., The, 13215 Roselawn Ave., Detroit 38, Mich.
Kaustine Furnace & Tank Corp., 1492 Washington Ave., Perry, N. Y.
Kawneer Co., Niles, Mich.
Kaye & McDonald, Inc., 11-15 Central Ave., West Orange, N. J.
Kaykor Industries, Inc., Yardville, N. J.
Kaylo Div., Owens-Illinois Glass Co., Box 1035, Toledo 1, O.
Keasbey Co., Robert A., 139-149 W. 19th St., New York, N. Y.
Keasbey & Mattison Co., Butler Ave., Ambler, Pa.
Keckley Co., O. C., 3400 Cleveland St., Skokie, Ill.
Keco Industries, Inc., 2438 Beekman St., Cincinnati 14, O.
Keeler Co., E., 238 West St., Williamsport 3, Pa.
Keeney Mfg. Co., Main St., Newington 11, Conn.
Kehm Corp., The, 5000 S. Halsted St., Chicago, Ill.
Keldur Div. of Quimby & Co., 80 Oakdale Rd., Chester, N. J.
Keleket X-Ray Corp., 1601 Trapelo Rd., Waltham 54, Mass.
Kellogg Co., M. W., The, 711 3rd Ave., New York 17, N. Y.
Kelvinator Div., American Motors Corp., 14250 Plymouth Rd., Detroit, Mich.
Kenco Mfg. Co., 5211 Telegraph Rd., Los Angeles 22, Calif.
Kenco Pump Div., American Crucible Products Co., 1305 Oberlin Ave., Lorain, O.
Kendall Co., Polyken Sales Div., 309 W. Jackson Blvd., Chicago 6, Ill.
Kenite Laboratory, 23 Samson Ave., P. O. Box 268, Madison, N. J.
Kenmore Machine Products, Inc., 15 Depew Ave., Lyons, N. Y.
Kennard Products, American Air Filter Co., Inc., 215 Central Ave., Louisville 8, Ky.
Kennedy Valve Mfg. Co., The, Elmira, N. Y.
Kenney Co., L. C., 2300 W. 59th St., Chicago 36, Ill.
Ken-Ray Brass Products, Inc., Vermont, Ill.
Kensico Tube Co., Mt. Kisco, N. Y.
Kent Co., Inc., 716 Canal St., Rome, N. Y.
Kent-Moore Organization, Inc., 28635 Mound Rd., Warren, Mich.
Ken-Way Corp., Sparta, Wis.
Kerotest Mfg. Co., 2525 Liberty Ave., Pittsburgh 22, Pa.
Kester Solder Co., 4201 Wrightwood Ave., Chicago 39, Ill.
Kewanee Boiler Div., American Radiator & Standard Sanitary Corp., 101 Franklin St., Kewanee, Ill.
Kewaunee Mfg. Co., 5123 So. Center St., Adrian, Mich
Key-Hak Div., Producers & Distributors, Inc., 1321 Hanover Ave., Allentown, Pa.
Keystone Carbon Co., Inc., 1935 State St., St. Marys, Pa.
Keystone Valve Corp., P. O. Box 6716, Houston 5, Tex.
Kice Metal Products Co., 485 South Washington Ave., Wichita 2, Kans.
Kidder Mfg. Co., Inc., J. F., 426 Colchester Ave., Burlington, Vt.
Kieley & Mueller, Inc., 64 Genung St., Middletown, N. Y.
Kilbury Mfg. Co., Inc., 14529 Hawthorne Blvd., Lawndale, Calif.
Kilgore, Inc., International Flare-Signal Div., Westerville, O.
Killebrew Engineering Corp., 8640 Pardee Lane, St. Louis 23, Mo.
King Co. of Owatonna, The, 928 N. Cedar St., Owatonna, Minn.
King Engineering Corp., 945 Willard Ave., Ann Arbor, Mich.
King Refrigerator Co., 76-02 Woodhaven Blvd., Glendale, N. Y.
King Union Co., Inc., Hillsgrove, R. I.
King Zeero Co., The, 4300 — 14 W. Montrose Ave., Chicago 41, Ill.
Kingsford Foundry & Machine Wks., 264 W. Second St., Oswego, N. Y.
Kingston-Conley, Inc., Div. of the Ohio Electric Mfg. Co., North Plainfield, N. J.
Kinney Mfg. Div., The New York Air Brake Co., 3529 Washington St., Boston 30, Mass.
Kirk & Blum Mfg. Co., 3130 Forrer St., Cincinnati 9, O.
Kirsch Co., Refrigeration Div., Sturgis, Mich.
Kisco Boiler & Engineering Co., 2414 Dekalb St., St. Louis 4, Mo.
Klauer Mfg. Co., 9th and Washington Sts., Dubuque, Ia.
Kleen-Air Mfg. Co., 225 N. Main St., Box 302, Janesville, Wis.
Kleer Kleen Mfg. Co., 103 Orchard Ave., Hayward, Calif.
Klenk's Aviation Snips, 107 E. 5th St., Wilmington, Del.
Kling Bros., Engineering Works, 1320 N. Kostner Ave., Chicago 51.
Klipfel Valves, Inc., 1075 Lincoln Ave., Hamilton, O.
Knapp Bros. Mfg. Co., 16 East 72nd St., Cincinnati 16, O.
Knapp Mills, Inc., 23-15 Borden Ave., Long Island City 1, N. Y.
Knight, Maurice A., Kelly Ave., Akron 9, O.
Knowles Mushroom Ventilator Co., 160 Bellevue Ave., Upper Montclair, N. J.
Kobe Inc., 3040 E. Slauson, Huntington Park, Calif.
Kody Blower Co., 200 Bunting Ave., Trenton 5, N. J.
Kol-Master Corp., 161 Walberg St., Oregon, Ill.
Kool Engineering Corp., 1320 N. Clybourn Ave., Chicago 18, Ill.
Kool-Kar Co., Inc., 1468 Penobscot Bldg., Detroit, Mich.
Kopperman & Sons, Inc., Joseph, 316 New St., Philadelphia 6, Pa.
Koppers Co., Inc., Koppers Bldg., Pittsburgh 19, Pa.
Koppers Co., Inc., Aeromaster Fan Dept., 6809 Scott St., Baltimore 3, Md.
Koppers Company, Inc., Metal Products Div., 200 Scott St., Baltimore 3, Md.
Korfund Co., Inc., 48-01-F 32nd Pl., Long Island City 1, N. Y.
Koven & Bro. Inc., L. O., 154 Ogden Ave., Jersey City 7, N. J.
Kraissl Co., Inc., The, Terhune and Williams Aves., Hackensack, N. J.
Kraloy Plastic Pipe Co., Inc., 4720 E. Washington Blvd., Los Angeles.
Kramer Trenton Co., N. Olden & Breunig Aves., Trenton 5, N. J.
Kresky Mfg. Co., Inc., Second & H Streets, Petaluma, Calif.
Krieg, Inc., Victor J., 611 Broadway, New York, N. Y.
Kritzer Radiant Coils, Inc., 325 North River St., Batavia, Ill.
Krueger Air Conditioning Co., 19 E. Rillito St., Tucson, Ariz.
Krueger Sentry Gauge Co., 1056 W. Mason St., Green Bay, Wis.
Krylon, Inc., Ford & Washington Sts., Norristown, Pa.
Kuhns Bros. Co., 1800 McCall St., Dayton 8, O.
Kulka Electric Corp., 633 S. Fulton Ave., Mt. Vernon, N. Y.
Kunkle Valve Co., 121 S. Clinton St., Ft. Wayne 2, Ind.
Kurz & Root Co., Appleton, Wis.

L

L. K. Iron Works, 3531 Third Ave., New York, N. Y.
L. O. F. Glass Fibers Co., 1810 Madison Ave., Toledo 1, O.
L. R. P. Corp., Liecester, N. Y.
Laars Engineers, 13246 Saticoy St., North Hollywood, Calif.
Labelon Tape Co., Inc., 450 Atlantic Ave., Rochester 9, N. Y.
LaBour Co., Inc., The, 1607 Sterling Ave., Elkhart, Ind.
Laclede Steel Co., Arcade Bldg., Rm. 1317, St. Louis 1, Mo.
Laclede Stoker Co., 4438 Hunt Ave., St. Louis 10, Mo.
La Crosse Steel Roofing & Corrugating Co., 227 Jay St., La Crosse, Wis.
Ladish Co., 5300 S. Packard Ave., Cudahy, Wis. (Milwaukee Suburb).
Ladish Co., Tri-Clover Div., 2809 60th St., Kenosha, Wis.
LaFavorite Rubber Mfg. Co., 256 Wagaraw Rd., Hawthorne, N. J.
Laharco Industries, 721-2nd Ave., N., Minneapolis 5, Minn.

Lake Chemical Co., 3052 W. Carroll Ave., Chicago 12, Ill.
Lakewood Engineering & Mfg. Co., 212 N. Carpenter St., Chicago 7, Ill.
Lamb Electric Co., A Div. of American Machine & Metals, Inc., Kent, O.
Laminated Sheet Products Corp., 449 Neponset St., Norwood, Mass.
Lammert & Mann Co., Wood & Walnut Sts., Chicago 12, Ill.
Lamson & Sessions Co., The, 5000 Tiedeman Rd., Cleveland 9, O.
Lancaster Pump & Mfg. Co., 1340 Manheim Pike, Lancaster, Pa.
Landis Machine Company, Fifth and Church Sts., Waynesboro, Pa.
Lapp Insulator Co., LeRoy, N. Y.
Laramy Products Co., 90 South St., Hingham, Mass.
Larkin Coils, Inc., 519 Memorial Dr., S. E., Atlanta 1, Ga.
LaSalle Products, Inc., 143 Seneca St., Buffalo 3, N. Y.
Lastik Products Co., Inc., 201 Iroquois Bldg., Pittsburgh 13, Pa.
Lattner Mfg. Co., P. M., 1411-9th St., S. W., Cedar Rapids, Iowa
Lau Blower Co., 2027 Home Ave., Dayton 7, O.
Lawler Automatic Controls, Inc., 453 N. MacQuesten Pkwy., Mount Vernon, N. Y.
Lawrence Pumps Inc., 371 Market St., Lawrence, Mass.
Lawrence Pump & Engine Co., P. O. Box 70, Lawrence, Mass.
Layne & Bowler, Inc., Box No. 6697, Hollywood Sta., Memphis 8, Tenn.
Layton Co., Inc., 4711 S. Whitnall Ave., Cudahy, Wis.
Leach Relay Co., 5915 Avalon Blvd., Los Angeles 3, Calif.
Lead Lined Iron Pipe Co., 1 Broadway, Wakefield, Mass.
Leahy Mfg. Co., 1804 E. 8th St., Los Angeles, Calif.
Leavitt Machine Co., East River St., Orange, Mass.
Lecourtenay Co., 5 Maine St., Newark 5, N. J.
Ledeen Mfg. Co., 3350 No. Gilman Rd., El Monte, Calif.
Lee Corp., P. O. Box 1801, Wilmington, Del.
Lee Mfg. Corp., 226 W. 22nd St., Hialeah, Fla.
Lee Vine Fin-Tube Radiator Co., Inc., 10 Fair St., New Haven, Conn.
Leeds & Northrup Co., 4970 Stenton Ave., Philadelphia 44, Pa.
Lees Div., John, The, Serrick Corp., Batavia St. and Kilgore Ave., Muncie, Ind.
Leffel & Co., James, The, 426 East St., Springfield, O.
LeHad Mfg. Corp., 1400 Seneca St., Buffalo, N. Y.
LE-HI Div., Hose Accessories Co., 2700 No. 17th St., Philadelphia 32.
Lehigh Fan & Blower Div., Fuller Co., 124 Bridge St., Catasauqua, Pa.
Lehigh Mfg. Co., Div. of Lehigh, Inc., Easton, Pa.
Leibfried Mfg. Corp., C. H., 95 Guernsey St., Brooklyn 22, N. Y.
Leiman Bros., Inc., 163 W. Christie St., Newark, N. J.
Leland Electric Co., The, Div. of American Machine & Foundry Co., 1501 Webster St., Dayton 1, O.
Lemlar Mfg. Co., 715 W. Redondo Beach Blvd., Gardena, Calif.
Lenco, Inc., 350 W. Adams St., Jackson, Mo.
Lenk Mfg. Co., Franklin, Ky.
Lenly Mfg. Co., Inc., 901 E. 9th St., Los Angeles 21, Calif.
Lennox Industries Inc., Marshalltown, Ia.
Lennox Industries Inc., 1711 Olentangy River Rd., Columbus, O.
Lennox Industries Inc., Box 1294, Des Moines, Ia.
Lenz Co., 3301 Klepinger Rd., Dayton 1, O.
Leonard Precision Products Co., 9200 Bolsa Ave., Santa Ana, Calif.
Leonard Valve Co., 1360 Elmwood Ave., Cranston 7, R. I.
LeRoi Div., Westinghouse Air Brake Co., Milwaukee 1, Wis.
Leslie Co., 237 Grant Ave., Lyndhurst, N. J.
Leslie Welding Co., Inc., 2943 Carroll Ave., Chicago 12, Ill.
Levow, David, 698 Hart St., Brooklyn 21, N. Y.
Lewellen Mfg. Co., Columbus, Ind.
Lewin-Mathes Co., Div. of Cerro de Pasco Corp., 1111 Chouteau Ave., St. Louis 2, Mo.
Lewis & Saunders, Lakeport, N. H.
Lewis Mfg. Co., Inc., 3044 S. W. 28th Lane, Miami 33, Fla.
Lewyt Air-Conditioner Corp., 5702 First Ave., Brooklyn, N. Y.
Lexsuco, Inc., 33095 Bainbridge Rd., Solon, O.
Leyman Mfg. Corp., John H. McGowan Co. Div., 1416 First National Bank Bldg., Cincinnati 2, O.
Libbey-Owens-Ford Glass Co., 608 Madison Ave., Toledo 3, O.
Libert Machine Co., 324 N. Roosevelt St., Green Bay, Wis.
Librascope, Inc., Commercial Div., 133 East Santa Anita Ave., Burbank, Calif.
Lidseen of North Carolina, Inc., 1000 First St., Hayesville, N. C.
Lientz Co., B. P., P. O. Box 2275, Kansas City, Mo.
Lilie-Hoffmann Cooling Towers, Inc., 1450 So. Vandeventer Ave., St. Louis 10, Mo.
Lima Electric Motor Co., Inc., The, Lima, O.
Lima Register Co., The, 1790 N. Cable Rd., Lima, O.
Lincoln Electric Co., The, 22801 St. Clair Ave., Cleveland 17, O.
Linde Co., Div. of Union Carbide Corp., 30 E. 42nd St., New York 17.
Lindy Heaters, Inc., 2370 Hoffman St., New York 58, N. Y.
Line Material Industries, McGraw-Edison Co., 700 W. Michigan, Milwaukee 1, Wis.
Linear Incorporated, N. W. Cor. State Rd. & Levick St., Philadelphia 35, Pa.
Link-Belt Co., Prudential Plaza, Dept. HPAC-59, Chicago 1, Ill.
Lintern Corp., Route 20 East, Painesville, O.
Liquid Carbonic Div. of General Dynamics Corp., 135 S. LaSalle St., Chicago 3, Ill.
Liquidometer Corp., 37-15 Skillman Ave., Long Island City 1, N. Y.
Liqui-Therm Co., 3220 N. 126th St., Brookfield, Wis.
Lithcote Corp., 5000 W. Lake St., Melrose Park, Ill.
Little Brass Goods Co., M. S., 151 New Park Ave., Hartford 6, Conn.
Little Giant Pump Co., Div. of Little Giant Vaporizer Co., Inc., 5101 Classen Blvd., P. O. Box 9545, Oklahoma City 18, Okla.
Littleford Bros., Inc., 453 E. Pearl St., Cincinnati 2, O.
Locke Regulator Co., Walter and Osborne Sts., Salem, Mass.
Lockformer Co., The, 4615 W. Roosevelt Rd., Chicago 50, Ill.
Lockport Mills, Inc., Lockport, N. Y.
Logan Clay Products, The, Box 698, Logan, O.
London Chemical Co., 1535 N. 31st Ave., Melrose Park, Ill.
Longergan Co., J. E., 2nd and Race Sts., Philadelphia 6, Pa.
Lookout Boiler & Mfg. Co., Compress St. & Mfrs. Rd., Chattanooga 1, Tenn.
Lord & Clark Co., Inc., 791 Tremont St., Boston 18, Mass.
Lord Mfg. Co., 1635 W. 12th St., Erie, Pa.
Louisville Drying Machinery Unit, General American Transportation Corp., 139 So. 4th St., Louisville 2, Ky.
Lovejoy Flexible Coupling Co., 4987 W. Lake St., Chicago 44, Ill.
Lowell Wrench Co., 54 Commercial St., Worcester 8, Mass.
Lucey Boiler & Mfg. Corp., 1514 Chestnut St., Chattanooga, Tenn.
Ludlow Valve Mfg. Co., Inc., The, Foot of Adams St., Troy, N. Y.
Lufkin Rule Co., Saginaw, Mich.
Lug-All Co., The, 355 Lancaster Ave., Haverford, Pa.
Lukens Steel Co. and Divisions, 308 S. First Ave., Coatesville, Pa.
Lumm Co., A. H., 3151 South Ave., Toledo 9, O.
Lunkenheimer Co., Waverly & Beekman Sts., Cincinnati 14, O.
Lurie & Lurie, 560 W. Washington, Chicago 6, Ill.
Luzerne Rubber Co., Muirhead Ave., Trenton 7, N. J.
Lynch Asbestos Co., 2939 So. Sunol Drive, Los Angeles 23, Calif.
Lynchburg Foundry Co., Courtland Bldg., Lynchburg, Va.

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M B Mfg. Co., P. O. Box 1825, New Haven 8, Conn.
M & E Mfg. Co., 2757 Winthrop Ave., Indianapolis, Ind.
M & H Valve & Fittings Co., Div. of Walworth Co., Anniston, Ala.
M-M-A, Inc., Coho Bldg., Lancaster, Pa.
MMM, Inc., 1831 Tenth St., P. O. Box 968, Portsmouth, O.
Maas & Waldstein Co., 2121 McCarter Highway, Newark 4, N. J.
Macksons Co., 125 Cedar St., New York 6, N. Y.
Mac-Lean-Fogg Lock Nut Co., 5535 N. Wolcott Ave., Chicago 40, Ill.
Madden Brass Products Co., P. O. Box 444, Aurora, Ill.
Madden Corp., The, 1345 Jarvis Ave., Chicago, Ill.
Magic Aire Div., United Electric Co., P. O. Box 119, Wichita Falls, Tex.
MaGirl Foundry & Furnace Co., 413 E. Oakland Ave., Bloomington, Ill.
Magnatrol Valve Corp., 67 5th Ave., Hawthorne, N. J.
Magnetic Seal Corp., 301 Sowams Rd., Barrington, R. I.
Magnetrol, Inc., 2110 S. Marshall Blvd., Chicago 23, Ill.
Magnode Products, Inc., Box 292, Trenton, O.
Magnus Chemical Co., South Ave., Garwood, N. J.
Mahon Co., R. C., The, P. O. Box 4666, Detroit 34, Mich.
Maid-O'-Mist, Inc., 3217 N. Pulaski Rd., Chicago 41, Ill.
Main Cornice Works, Inc., 2824 North Main St., Los Angeles, Calif.
Majac Inc., 23rd St., Sharpsburg, Pittsburgh 15, Pa.
Major Controls, Corona, Calif.
Mall Tool Co., Div. of Remington Arms Co., Inc., 7740 South Chicago Ave., Chicago 19, Ill.
Malleable Iron Fittings Co., Branford, Conn.
Mallory & Co., Inc., P. R., 60 S. Gray St., Indianapolis 6, Ind.
Malsbary Mfg. Co., 845 92nd Ave., Oakland 3, Calif.
Mammoth Furnace Co., 6425 Cambridge St., Minneapolis 16, Minn.
Manhattan Perforated Metal Co., Inc., 43-17 37th St., Long Island City 1, N. Y.
Manheim Mfg. & Belting Co., 325 Stiegel St., Manheim, Pa.
Manitowoc Shipbuilding, Inc., 16th & The River, Manitowoc, Wis.
Mannesmann-Easton Plastic Products Co., Inc., 900 Line St., Easton, Pa.
Manning Co., Charles E., 90 Clairton Blvd., Pittsburgh 36, Pa.
Manning & Lewis Engineering Co., 32 Ogden St., Newark 4, N. Y.
Manning, Maxwell & Moore, Inc., 250 East Main St., Stratford, Conn.
Mansfield & Green, Inc., 1051 Power Ave., Cleveland 14, O.
Manufacturers Corp., 104 Ausdale Ave., P. O. Box 434, Mansfield, O.
Manufacturers Engineering & Equipment Corp., Hatboro, Pa.
Maple City Furnace Co., Monmouth, Ill.
Maplewood Machinery Co., Inc., 2634 Fullerton Ave., Chicago 47, Ill.
Marathon Electric Mfg. Corp., Cherry and Randolph Sts., P. O. Box 630, Wausau, Wis.
Marble Electric Corp., Gladstone, Mich.
March Mfg. Co., Inc., 8015 N. Lawndale Ave., Skokie, Ill.
Marco Development Co., Inc., 815 W. Fifth St., Wilmington 99, Del.
Marco Electric Mfg. Corp., 3d & Franklin Sts., Womelsdorf, Pa.
Mar-Coil Heater Co., 200 Paterson Plant Rd., Union City, N. J.
Marion Machine Foundry, Inc., P. O. Box 989, Marion, Ind.
Markal Co., 3052 W. Carroll Ave., Chicago 12, Ill.
Marken Plastics Corp., 2724 E. 55th St., Los Angeles, Calif.
Marley Co., The, 222 West Gregory Blvd., Kansas City 14, Mo.
Marlin-Rockwell Corp., Jamestown, N. Y.
Marlo Coil Co., 7100 S. Grand Ave., St. Louis 11, Mo.
Marlow Pumps, Division of Bell & Gossett Co., P. O. Box 200, Midland Park, N. J.
Marman Div., Aeroquip Corp., 11214 Exposition Blvd., Los Angeles 64.
Marquette Coppersmithing Co., Christian & Water Sts., Philadelphia 47, Pa.
Marquette Mfg. Co., Inc., 307 E. Hennepin Ave., Minneapolis 14, Minn.
Marsh Heating Equipment Co., 3501 Howard St., Skokie, Ill.
Marsh Instrument Co., 3501 Howard St., Skokie, Ill.
Marsh Refrigeration Equipment Co., Affiliate Jas. P. Marsh Corp., 3501 Howard St., Skokie, Ill.
Marsh Valve Co., 4th St. & Brigham Rd., Dunkirk, N. Y.
Marshalltown Mfg. Co., 901 E. Nevada, Marshalltown, Ia.
Marsto Machine Co., 231 Willard St., West Quincy 69, Mass.
Martin Co., Inc., J. O., 637 Minna St., San Francisco 3, Calif.
Martin Fan & Blower Co., 4634 W. 21st Pl., Chicago 50, Ill.
Martin & Sons, H. P., 801 W. 12th St., Owensboro, Ky.
Marvel Engineering Co., 7227 N. Hamlin Ave., Chicago 45, Ill.

Marviray, Inc., 54 Clifton St., Newark 5, N. J.
Mason-Neilan, Div. of Worthington Corp., Norwood, Mass.
Mason Products, Inc., 18 Cranes Ct., Woburn, Mass.
Master-Bilt Refrigeration Mfg. Co., 4209 Folsom Ave., St. Louis 10, Mo.
Master Control Co., The, 2034 Fifth St., Cuyahoga Falls, O.
Master Electric Co., Div. of Reliance Electric & Engineering Co., 126 Davis Ave., Dayton 1, O.
Master Fan Corp., 1323 Channing St., Los Angeles 21, Calif.
Master Mechanics Co., The, 2097 Columbus Rd., Cleveland; O.
Master Products Co., 7000 S. Wentworth, Chicago 21, Ill.
Master Vibrator Co., 361 Stanley Ave., Dayton, Ohio.
Mathes Co., The, 1227 Broadway, Ft. Worth, Tex.
Mathey Machine Works, Inc., C. A., P. O. Box 1159, Tulsa, Okla.
Matrix Engineering Corp., 3016 E. Lake St., Minneapolis 6, Minn.
Matthews Electric Heater Mfg. Co., Albertville, Ala.
Matthiessen & Hegeler Zinc Co., 9th & Sterling Sts., La Salle, Ill.
Mauney, Rowe A., Box 623, Marion, N. C.
Maurath, Inc., 21800 Miles Ave., Cleveland 22, O.
Maurey Mfg. Corp., 2907 S. Wabash Ave., Chicago 16, Ill.
Maxitrol Co., 12200 Beech Rd., Detroit 39, Mich.
Maxon Premix Burner Co., P. O. Box 71, Muncie, Ind.
May Company, Galesburg, Ill.
Mayer Refrigerating Engineers, Inc., Lincoln Park, N. J.
Mayne Products Co., 324 Harries Bldg., Dayton 2, O.
McAlear Mfg. Co., 1921 S. Western Ave., Chicago 8, Ill.
McAuley Trap Co., 104 First Ave., Pittsburgh 22, Pa.
McCord Corp., 2587 E. Grand Blvd., Detroit 11, Mich.
McCorkle Co., D. H., 6th & Bancroft Way, Berkeley 10, Calif.
McDonald Mfg. Co., A. Y., 12th & Pine Sts., Dubuque, Iowa.
McDonnell & Miller, Inc., 3500 N. Spaulding Ave., Chicago 18, Ill.
McGraw-Edison Co., Clark Div. & Tropic-Aire Div., 5201 W. 65th St., Chicago 28, Ill.
McIntire Co., The, Okner Parkway, P. O. Box 5, Livingston, N. J.
McKay Co., 1005 Liberty Ave., Pittsburgh 22, Pa.
McLarty Systems. 2600 Dickman Rd., Battle Creek, Mich.
McMillan Comfortaire, Inc., P. O. Box 5897, 1501 Miami Rd., Jacksonville 7, Fla.
McMillan Industrial Supplies, C. C., 3912 S. W. Dolph Court, Portland 19, Oregon.
McNeill Smoke Eliminator Co., 523 N. Halsted, Chicago, Ill.
McPherson Furnace & Supply Co., 1805 N. E. Second Ave., Portland 12, Ore.
McQuay, Inc., 1600 Broadway, N. E., Minneapolis 13, Minn.
McQuay-Norris Mfg. Co., Southwest Ave. at Marconi, St. Louis 10.
McRae Specialty Co., Don, 750 N. Glendale Ave., Glendale 6, Calif.
McWane Cast Iron Pipe Co., 1201 Vanderbilt Rd., Birmingham 2, Ala.
Mearlcrete Div., Mearl Mfg. Corp., 220 Westfield Ave., W., Roselle Park, N. J.
Mears Electric Controls, Swan Island, Portland, Ore.
Mears-Kane-Ofeldt, Inc., Div. S. I. Johnson Co., P. O. Box 223, Bridgeport, Pa.
Mechanical Industries Production Co., 217-223 Ash St., Akron 8, O.
Mechanical Products Corp., 168 N. Ogden Ave., Chicago 7, Ill.
Meier Electric & Machine Co., Inc., 3525 E. Washington St., Indianapolis 7, Ind.
Mel Products Co., The, Fonton Rd., East Haven, Conn.
Melchior, Armstrong. Dessau Co. of Delaware, Inc., Ridgefield, N. J.
Memco Crane Co., 1007 N. W. 36th St., Oklahoma City 18, Okla.
Memphis Pump & Mfg. Co., P. O. Box 3215, Memphis, Tenn.
Menardi & Co., 1222 E. Grand Ave., El Segundo, Calif.
Mercer Rubber Co., 146 Mercer St., Hamilton Sq., N. J.
Merchant & Evans Co., 2035 Washington Ave., Philadelphia 46, Pa.
Mercoid Corp., The. 4201 Belmont Ave., Chicago 41, Ill.
Mercury Clutch Div., Automatic Steel Products, Inc., Canton 6, O.
Mercury Hydraulics, Inc., 1632 Wazee St., Denver 2, Colo.
Meriam Instrument Co., The, 10929 Madison Ave., Cleveland 2, O.
Mesker Steel Corp., Geo. L., 400 N. W. First St., Evansville 8, Ind.
Metalcraft Inc., Mason City, Ia.
Metal Fabricators, Inc., P. O. Box 3232, Charlotte 3, N. C.
Metal Products Eng., Inc., 4000 Long Beach Ave., Los Angeles 58, Calif.
Metal & Thermit Corp., Rahway, N. J.
Metallo Gasket Co., 16 Bethany St., New Brunswick, N. J.
Metallurgical Products Dept. of General Electric Co., 11177 E. 8 Mile Rd., Detroit, Mich.
Metalmaster Corp., 66 Elm St., Newark 5, N. J.
Metalweld, Inc., Industrial Welding Div., Scotts Lane & Abbottsford Ave., Philadelphia 29, Pa.
Metalweld, Inc., Protective Coatings Div., Scotts Lane & Abbotsford Ave., Philadelphia 29, Pa.
Met-L-Chek Co., 11919 S. Western Ave., Los Angeles 47, Calif.
Met-L-Wood Corp., 6755 W. 65th St., Chicago, Ill.
Metrex Valve Co., 9901 Franklin Ave., Franklin Park, Ill.
Metropolitan Refining Co., Inc., 50-23 Twenty-Third St., Long Island City 1, N. Y.
Mettler Co., Inc., The, Div. of Eclipse Fuel Engineering Co., 1101 Buchanan St., Rockford, Ill.
Meyer & Bro. Co., F., 308 S. Commercial St., Peoria 2, Ill.
Mever Furnace Co., The, P.O. Box 989, Peoria 1, Ill.
Meyer & Wenthe, Inc., 30 S. Jefferson St., Chicago, Ill.
Meyercord Co., The, 5323 West Lake St., Chicago, Ill.
Michael Electric Co., Inc., 15 Stiles St., New Haven, Conn.
Michigan Pipe Co., 2415 Burdette Ave., Ferndale 20, Mich.
Mic-Lin Co., Route 38 at Rudderow Ave., Maple Shade 6, N. J.
Micro Metallic Corp., 30 Sea Cliff Ave., Glen Cove, N. Y.
Micro Products Co., 20 N. Wacker Dr., Chicago 6, Ill.
Micro Switch Div. of Minneapolis-Honeywell Regulator Co., Chicago & Spring Sts., Freeport, Ill.
Microtron Corp., P. O. Box 2092, Charlotte, N. C.
Midco Register Corp., 1059 Grand Ave., St. Paul, Minn.
Mid-Continent Metal Products Co., 1960 Clybourn Ave., Chicago 14.
Middlesex Paper Tube Co., Inc., 345 Chemsford St., Lowell, Mass.
Midland Paint & Varnish Co., 3802 E. 91st St., Cleveland 5, O.
Mid-States Welder Mfg. Co., 6025 S. Ashland Ave., Chicago 36, Ill.
Midwest Air Conditioning Co., 510 Third St., Des Moines, Ia.
Midwest Airmoving Corp., 4498 Beidler Rd., Willoughby, O.
Midwest Automatic Control Co., 510 Third St., Des Moines, Ia.
Midwest Piping Co., Inc., 1450 S. Second St., St. Louis 4, Mo.
Midwest Pump Div. of Sherwood Mfg. Co., 500 N. Dodgion, Independence, Mo.
Miller Electric Mfg. Co., Inc., 718 S. Bounds St., Appleton, Wis.
Miller-Harris Instrument Co., 601 E. Ogden Ave., Milwaukee 2, Wis.
Miller Mfg. Co., 251 W. Kellog Blvd., St. Paul 2, Minn.
Miller Valve Co., Inc., 1620 Pennsylvania Ave., Pittsburgh 33, Pa.
Millers Falls Co., 57 Wells St., Greenfield, Mass.
Mill-Rose Co., 1985 E. 59th St., Cleveland, O.
Milton Equipment Co., N. E. Cor. 4th Race St., Philadelphia 6, Pa.
Milton Roy Co., 1371 E. Mermaid Ave., Philadelphia 18, Pa.
Milwaukee Electric Tool Corp., 5362 W. State St., Milwaukee 8, Wis.
Milwaukee Valve Co., 2375 So. Burrell St., Milwaukee 7.
Mine Safety Appliances Co., 201 N. Braddock Ave., Pittsburgh 8, Pa.
Minerallac Electric Co., 25 N. Peoria St., Chicago 7, Ill.
Minneapolis-Honeywell Regulator Co., 2753 4th Ave., S., Minneapolis 8, Minn.
Minneapolis-Honeywell Regulator Co., Industrial Div., Wayne & Windrim Aves., Philadelphia 44, Pa.
Minnesota Mining & Mfg. Co., 900 Bush Ave., St. Paul 6, Minn.
Minnesota Mining & Mfg. Co., Adhesives & Coatings Div., 411 Piquette, Detroit, Mich.
Minnesota & Ontario Paper Co., Investors Bldg., Minneapolis, Minn.
Minnesota Rubber Co., 3630 Wooddale Ave., Minneapolis.
Minn-Kota Foundry & Mfg. Co., P. O. Box 576, Moorhead, Minn.
Miracle Adhesives Corp., 250 Pettit Ave., Bellmore, N. Y.
Mir-O-Col Alloy Co., Inc., 340 North Ave., 21, Los Angeles 31, Calif.
Mirror Patented Stove Pipe Co., 55-65 Park St., Hartford 14, Conn.
Misener Mfg. Co., Inc., 202-8 Walton St., Syracuse 2, N. Y.
Mission Appliance Corp., 12611 Crenshaw Blvd., Hawthorne, Calif.
Mississippi Glass Co., St. Louis 7, Mo.
Mitchell Co., John E., 3800 Commerce St., Dallas, Tex.
Mitchell & Co., Inc., W. K., 29th & Ellsworth, Philadelphia 46, Pa.
Mitchell Mfg. Co., 3200 W. Peterson Ave., Chicago, Ill.
Mitchell Radiation Products Corp., 128 E. Washington St., Norristown, Pa.
Modern Div., George Getz Corp., 230 E. Main St., Freeport, Ill.
Modern Dust Bag Co., Inc., 132 E. Railroad Ave., West Haverstraw, N. Y.
Modern Engineering Co., 3411 Pine Blvd., St. Louis 3, Mo.
Modern Hanger Corp., The, 4734 Hough Ave., Cleveland 3, O.
Modernheat Cable Corp., Box 576, Kingsport, Tenn.
Modine Mfg. Co., 1509 De Koven Ave., Racine, Wis.
Moeller Instrument Co., 132nd St. & 89th Ave., Richmond Hill 18, N. Y.
Moeschl-Edwards Corrugating Co., Inc., The, P. O. Box 1115, Cincinnati 1, O.
Molco Drilling Machines, Inc., 1100 20th St., N. W., Washington 6, D. C.
Molded Fiber Glass Sheet Co., 4304 Benefit Ave., Ashtabula, O.
Monarch Mfg. Works, Inc., 2523 E. Ontario St., Philadelphia 34, Pa.
Monash-Younker Co., Inc., 532 So. Throop St., Chicago 7, Ill.
Monitor Controller, 99 Grove St., Rockland, Mass.
Monogram Products Co., Inc., 731 N. 35th St., Philadelphia 4, Pa.
Mono-Seal Products, 44 Garden St., Everett 49, Mass.
Monsanto Chemical Co., Lindbergh & Olive St. Rd., St. Louis 24, Mo.
Montag Inc., 8701 N. Denver Ave., Portland 17, Ore.
Montgomery Bros., 1122 Howard St., San Francisco, Calif.
Montgomery Chemical Co., Jenkintown, Pa.
Moore Inc., Goodloe E., 2811 N. Vermilion, Danville, Ill.
Moore Co., The, 800 S. Missouri, Marceline, Mo.
Moore & Co., Samuel, Mantua, O.
Moore Dry Kiln Co., 1220 W. State St., Jacksonville, Fla.
Moore Products Co., H and Lycoming Sts., Philadelphia 24, Pa.
Moraine Products Div., General Motors Corp., Dayton 1, O.
Moran Flexible Joint Co., Div. of Railroad Products Co., 1551 Queen City Ave., Cincinnati 14, O.
Moran Paint Co., P. O. Box 193, Xenia, O.
Morehead Moisture Control, P. O. Box 3854, Parkgrove Sta., Detroit 5, Mich.
Moreheat Distribution Inc., 5608 Stewart Rd., Cincinnati 27, O.
Morey, Dan, 814 S. Robertson Blvd., Los Angeles 15, Calif.
Mor-Flo Heater Corp., 2176 E. 76th St., Cleveland 3, O.
Morganite, Inc., Carbon Specialties Div., 3304 48th Ave., Long Island City 1, N. Y.
Morrill Motors, 3685 Northrop, Ft. Wayne, Ind.
Morris Coupling & Clamp Co., P. O. Box 10, Kittanning, Pa.
Morris Sheet Metal Works, 1680 W. Mound St., Columbus 23, O.
Morrison Brothers Co., 24th & Elm Sts., Dubuque, Ia.
Morrison Products, Inc., 16816 Waterloo Rd., Cleveland 10, O.
Morse Boulger Destructor Co., 80 Fifth Ave., New York 11, N. Y.
Morse Chain Co., Ithaca, N. Y.
Morse-Smith-Morse Co., The, 165 Dexter Ave., Watertown 72, Mass.
Mortell Co., J. W., Kankakee, Ill.
Morton Engineering Service, Paul S., 5134 Meadowlark Lane, P. O. Box 146, Kalamazoo, Mich.
Mt. Hawley Mfg. Co., Inc., 1209 W. Alta Rd., Peoria 4, Ill.
Mountain States Equipment Co., 1238 Speer Blvd., Denver 4, Colo.
Muckle Mfg. Co., Owatonna 3, Minn.

Mueller Brass Co., 1925 Lapeer Ave., Port Huron, Mich.
Mueller Climatrol, Div. of Worthington Corp., 2005 W. Oklahoma Ave., Milwaukee 1, Wis.
Mueller Co., 512 W. Cerro Gordo St., Decatur, Ill.
Muellermist Irrigation Co., 2612 S. 9th Ave., Maywood, Ill.
Mueller Steam Specialty Co., Inc., 29 Messerole Ave., Brooklyn, N. Y.
Mult-A-Frame Div., Ainsworth Mfg. Corp., 1471 E. Atwater St., Detroit 7, Mich.
Multiplex Mfg. Co., Berwick, Pa.
Multi-Vent Div., Pyle-National Co., The, 1373 Kostner Ave., Chicago 51, Ill.
Muncie Gear Wks., Inc., 700 N. Wysor, Muncie, Ind.
Mundet Cork Corp., 7101 Tonnelle Ave., North Bergen, N. J.
Mundt & Sons, Charles, 53 Fairmount Ave., Jersey City 4, N. J.
Munn & Steele, Inc., Castle Island Terminal, South Boston, Mass.
Munray Products, Div. of Fanner Mfg. Co., 12400 Crossburn St., Cleveland, O.
Murray Co. of Texas, The, P. O. Box 1517, Atlanta, Ga.
Murray Co., 11 W. Pennsylvania Ave., Towson 4, Md.
Murray Iron Wks. Co., 1106 Washington St., Burlington, Ia.
Murray Mfg. Co., D. J., 1002-24 Third St., Wausau, Wis.
Mutual Liquid Gas & Equipment Co., 17129 S. Broadway, Box 392, Gardena, Calif.
Myers & Bro. Co., F. E., The, Ashland, O.
Mystik Adhesive Products, Inc., 2635 N. Kildare Ave., Chicago 39, Ill.

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Narda Ultrasonics Corp., 625 Main St., Westbury, Long Island, N. Y.
Nash Engineering Co., 307 Wilson Ave., South Norwalk, Conn.
Nason Co., Clarkston, Mich.
National Acme Co., The, 170 E. 131st St., Cleveland 8, O.
National Airoil Burner Co., Inc., 1330 E. Sedgley Ave., Philadelphia 34, Pa.
National Aluminate Corp., 6277 W. 66th Pl., Chicago 38, Ill.
National Aniline Div., Allied Chemical Corp., 40 Rector St., New York 6, N. Y.
National Asphalt Corp., Bulkley Building, Cleveland 15, O.
National Carbon Co., A Div. of Union Carbide Corp., 30 E. 42nd St., New York 17, N. Y.
National Clay Pipe Mfg., Inc., 1820 N. St., N.W., Washington, D. C.
National Controls, Inc., 15 Brook St., Newton 58, Mass.
National Cork Co., 1 Engle Street, Englewood, N. J.
National Cylinder Gas, Div. of Chemetron Corp., 840 N. Michigan Ave., Chicago 11, Ill.
National Dust Collector Corp., 549 W. Washington, Chicago 6, Ill.
National Engineering & Mfg. Co., 16th & Lamine St., Sedalia, Mo.
National Gas Equipment Co., Inc., P. O. Box 122, Denison, Tex.
National Grille & Register Co., 10740 Broadway Ave., Cleveland, O.
National Gypsum Co., 325 Delaware Ave., Buffalo, N. Y.
National Heater Co., Inc., 2475 Doswell Ave., St. Paul 8, Minn.
National Instrument Laboratories, Inc., 828 Evarts St., N.E., Washington 18, D. C.
National Lead Co., 111 Broadway, New York 6, N. Y.
National Lock Co., Inc., 1902 Seventh St., Rockford, Ill.
National Oil Burner Co. of N. Y., Inc., 614 Bergen St., Brooklyn, N. Y.
National Pipe Bending Co., 122 River St., New Haven 13, Conn.
National Pneumatic Co., Inc., 420 Lexington Ave., New York, N. Y.
National Steam Pump Co., 701 W. Johnson St., Upper Sandusky, O.
National Super Service Co., The, 1944 N. 13th St., Toledo 2, O.
National System of Garage Ventilation, Inc., 138 W. William, Decatur, Ill.
National Time & Signal Corp., 21800 Wyoming Ave., Detroit 37, Mich.
National Tube Div., United States Steel Corp., 525 William Penn Place, Pittsburgh 30, Pa.
National-U. S. Radiator Corp., 944 Ash St., Johnstown, Pa.
National Valve & Mfg. Co., 3101 Liberty Ave., Pittsburgh 1, Pa.
Naugatuck Chemical Div., United States Rubber Co., Naugatuck, Conn.
Navan Products Inc., International Airport, Los Angeles 45, Calif.
Naylor Pipe Co., 1269 E. 92nd St., Chicago 19, Ill.
Nazar Rubber Co., 2727 Avondale, Toledo 7, O.
Nebel Mfg. Co., P. O. Box 3942, Shaker Square Sta., Cleveland 20, O.
Nebraska Boiler Company, Inc., 235 N. 9th St., Lincoln, Nebr.
Neff-Perkins Co., 33 Stage Rd., Painesville, O.
Neilson Chemical Co., 2300 Gainsboro, Detroit 20 (Ferndale), Mich.
Neirad Industries, Inc., P. O. Box 865, Darien, Conn.
Nelson Electric Mfg. Co., 4041 S. Sheridan Rd., Tulsa, Okla.
Nelson Foundry Co., 6116 Oakton. Morton Grove, Ill.
Nelson Mfg. Co., B. F., 401 Main St., N. E., Minneapolis 13, Minn.
Nelson Stud Welding Div., Gregory Industries, Inc., Lorain, O.
Neptune Meter Co., 19 W. 50th St., New York 20, N. Y.
Nesbitt, Inc., John J., State Rd. & Rhawn St., Philadelphia 36, Pa.
New Castle Products, Inc., New Castle, Ind.
New Departure Div., General Motors Corp., Bristol, Conn.
New England Carbide Tool Co., Inc., 55 Commercial St., Medford 55, Mass.
New England Gear Wks., Southington, Conn.
New England Valve Co., 47 Lagrange Pl., Worcester, Mass.
New Haven Copper Co., The, Seymour, Conn.
New Hermes Engraving Machine Corp., 13-19 University Pl., New York, N. Y.
New London Engineering Co., 1700 Division St., New London, Wis.
New York Air Valve Corp., 1850 Atlantic Ave., Brooklyn 33, N. Y.
New York Belting & Packing Co., 1 Market St., Passaic, N. J.
New York Blower Co., 3159 Shields Ave., Chicago 16, Ill.
New York Brass Foundry, 405 Broome St., New York 13, N. Y.
Newage Industries, Inc., 222 York Road, Jenkintown, Pa.
Newark Controls Co., 15 Ward St., Bloomfield, N. J.
Newark Wire Cloth Co., 351 Verona Ave., Newark 4, N. J.
Newcomb-Detroit Co., 5741 Russell St., Detroit 11, Mich.
Newman Electric Motors Inc., 357 Wilson Ave., Newark 5, N. J.
Niagara Blower Co., 405 Lexington Ave., Room 3516, New York 17.
Niagara Machine & Tool Wks., 637-697 Northland Ave., Buffalo 11, N. Y.
Niagara Products Co., 4311 E. Thomas Rd., Phoenix, Ariz.
Nibco, Inc., Elkhart, Ind.
Nice Ball Bearing Co., 30th and Hunting Park Ave., Philadelphia 40.
Nichols Instruments Co., 813 N. Calvert St., Baltimore 2, Md.
Nicholson & Co., W. H., 178 Oregon St., Wilkes-Barre, Pa.
Nicolet Industries, Inc., Hamilton, O.
Nielsen, Inc., E. V., 575 Hope St., P. O. Box 353, Glenbrook Sta., Stamford, Conn.
Nikoh Tube Co., 5000 S. Whipple, Chicago 32, Ill.
Noera Mfg. Co., Div. Chase Brass & Copper Co., Waterbury 20, Conn.
Nooter Corp., 1400 S. Second St., St. Louis 4, Mo.
Norden-Ketay Corp., Instrument Systems Div., Wiley St., Milford. Conn.
Norgren Co., C. A., 3400 So. Elati St., Englewood, Colo.
Norky Mfg. Corp., P. O. Box 669, 714 Pike St., Covington, Ky.
Norma-Hoffmann Bearings Corp., Stamford, Conn.
Normal Chemical Co., 1630 Carroll Ave., St. Paul 4, Minn.
Norman Products Co., Inc., 1150 Chesapeake Ave., Columbus, O.
Norristown Asbestos Div., Nicolet Industries, Inc., Washington St., Norristown, Pa.
North American Asbestos Corp., 141 W. Jackson Blvd., Chicago 3, Ill.
North American Mfg. Co., 4455 E. 71st St., Cleveland 5, O.
North American Mogul Products Co., The, Standard Bldg., Cleveland 13, O.
North Shore Nameplate, Inc., 214-27 Northern Blvd., Bayside, N. Y.
Northern Blower Co., 6428 Barberton Ave., Cleveland 2, O.
Northern Ordnance Inc., Subsidiary of Northern Pump Co., Columbia Heights P. O., Minneapolis 22, Minn.
Norton Co., 1 New Bond, Worcester 6, Mass.
Norwalk Air Conditioning Corp., 138 Water St., S. Norwalk, Conn.
Norwalk Valve Div., Eclipse Fuel Engineering Co., 1100 Buchanan St., Rockford, Ill.
Norwood Associated Engineers Inc., 904 Columbus Ave., Springfield, Mass.
Norwood Controls, A Unit of Detroit Controls, 934 Washington St., Norwood, Mass.
Norwood Products Co., Div. of A. R. Wood Mfg. Co., Luverne, Minn.
Novo Pump & Engine Co., 702 Porter, Lansing, Mich.
Nuclear and Power Equipment Corp., 298 East Grand Ave., S. San Francisco, Calif.
Nupla Mfg. Co., 1026 N. Sycamore, Los Angeles 38, Calif.
Nutmeg Chemical Co., 134 Haven St., New Haven, Conn
NuTone, Inc., Madison & Red Banks Rds., Cincinnati 27, O
Nutt Co., Buell W., 11614 W. Pico Blvd., Los Angeles 64, Calif.
Nu-way Corp., The, 2416 4th Ave., Rock Island, Ill.
Nye Tool Co., 4120-30 Fullerton Ave., Chicago 39, Ill.
Nylok Corp., The, 611 Industrial Ave., Paramus, N. J.
Nylon Moulding Corp., 141 S. Avenue, Garwood, N. J.

O

OPW Corp., 2735 Colerain Ave., Cincinnati 25, O.
O.T.M. Corp., 7340 Katy Rd., Houston 24, Tex.
Oakite Products, Inc., 19 Rector St., New York 6, N. Y.
Obear & Son, W. F., 940 W. Florence Ave., P. O. Box 406, Inglewood 1, Calif.
Oberdorfer Foundries, Inc., 3007 Thompson Rd., Syracuse, N. Y.
O'Brien Steam Specialty Co., Inc., P. O. Box 217, Eastwood Station, Syracuse 6, N. Y.
Octagon Process, Inc., 58 Bank St., Staten Island 1, New York.
Octagon Ventilator Co., 5828-30 S. Oakley Ave., Chicago 36, Ill.
Ohio Brass Co., 380 N. Main St., Mansfield, O.
Ohio Foundry & Mfg. Co., Penn R. R. & Slack St., Steubenville, O.
Ohio Injector Co., 275 Main St., Wadsworth, O.
Ohio Nut & Bolt Co., 33 First Ave., Berea, O.
Ohio Pipe Bending & Machine Co., 3900 Trent Ave., Cleveland 9, O.
Ohmlac Paint & Refining Co., Inc., 41-40 Crescent Ave., Long Island City, N. Y.
Oil Equipment Mfg. Corp., 169 Derby Ave., New Haven, Conn.
Okadee Co., 332 S. Michigan, Chicago, Ill.
Okonite Co., The, Passaic, N. J.
Old Dominion Iron & Steel Corp., Bell Isle, Richmond, Va.
Olin Mathieson Chemical Corp., Chemicals Div., Mathieson Bldg., Baltimore 3, Md.
Olin Mathieson Chemical Corp., Metals Div., East Alton, Ill.
Olsen Mfg. Co., C. A., Elyria, O.
Olsen Testing Machine Co., Tinius, Easton Rd., Willow Grove, Pa.
Omark Industries, Inc., 9702 S.E. McLoughlin Blvd., Portland 22, Ore.
Omega Div., B-I-F Industries, Inc., 381 Harris Ave., Providence 1, R. I.
Omega Products, 4700 W. Washington Blvd., Chicago 44, Ill.
On Mark Couplings, 4440 York Blvd., Los Angeles 41, Calif.
Onan & Sons Inc., D. W., 2515 University S. E., Minneapolis 14, Minn.
O'Neil-Irwin Mfg. Co., 541 Eighth. Lake City. Minn.
Optimum Control Corp., 2930 Woodhill Rd., Cleveland 4, O.
Orangeburg Mfg. Co., Orangeburg. N. Y.
Orbit Sales Co., Inc., 185 Church St., New Haven, Conn.
O'Reilly Engineering Co., 4924 W. Davis, Dallas 11, Tex.
Ormsby-Osterman, Inc., 3631 Cass Ave., St. Louis 13, Mo.
Orr & Sembower, Inc., Box 1138, Reading, Pa.
Osborn Mfg. Co., 5401 Hamilton Ave., Cleveland 14, O.
Oshkosh Filter & Softener Co., 204 Ceape Ave., P. O. Box 137, Oshkosh, Wis.
Oster Mfg. Co., The, 1340 E. 289th St., Wickliffe, O.

Oster Mfg. Co., John, 5055 N. Lydell Ave., Milwaukee 17, Wis.
OverHead Heaters Inc., 1612 Book Bldg., Detroit 26, Mich.
Owens Co., H., 9300 Venice Blvd., Culver City, Calif.
Owens & Co., Inc., Henry, 51 Washington Ave., Cranston 7, R. I.
Owens-Corning Fiberglas Corp., National Bank Bldg., Toledo 1, O.
Oxy Catalyst, Inc., Wayne, Pa.
Oxygen Equipment & Service Co., 8335 S. Halsted St., Chicago 20.
Ozalid Div. of General Aniline & Film Corp., 1505 Ansco Rd., Johnson City, N. Y.

P

P-K Industries, Inc., 27 Porete Ave., North Arlington, N. J.
Pabco Industrial Insulations Div., Fibreboard Paper Products Corp., 475 Brannan St., San Francisco 19, Calif.
Pace Inc., R.M., 4510 Bonnie Brae, Indianapolis, Ind.
Pacific Fittings Div., General Metals Corp., Hollydale, Calif.
Pacific Lumber Co., The, 100 Bush St., San Francisco 4, Calif.
Pacific Pumping Co., 9201 San Leandro Blvd., Oakland, Calif.
Pacific States Felt & Mfg. Co., Inc., 845 Howard St., San Francisco.
Pacific Steel Boiler Div., National-U. S. Radiator Corp., 944 Ash St., Johnstown, Pa.
Pacific Transducer Corp., 11836 W. Pico Blvd., Los Angeles 64, Calif.
Pacific Tube Co., 5710 Smithway St., Los Angeles 22, Calif.
Packard Electric Div., General Motors Corp., Warren, O.
Packard Water Conditioners, Inc., 1720 Prudential Bldg., Jacksonville, Fla.
Packless Metal Hose, Inc., 730 S. Columbus Ave., Mt Vernon, N. Y.
Page Steel & Wire, Div. of American Chain & Cable Co., Inc., Monessen, Pa.
Paine Co., 2 Westgate Rd., Addison, Ill.
Palmer Electric Co., Inc., 230 E. Alexandrine, Detroit 1, Mich.
Palmer Mfg. Corp., 2200 W. Fillmore St., Phoenix, Ariz.
Palmer-Shile Co., 16072 Fullerton, Detroit 27, Mich.
Palmer Thermometers, Inc., 2501 Norwood Ave., Cincinnati (Norwood) 12, O.
Pam Co., The, 1951 N. W. Wilson St., Portland, Ore.
Pam Narrow Fabrics Co., 2807 Long Beach Rd., Oceanside, N. Y.
Panel Heat, Inc., 1395 Marconi Blvd., Copiague, N. Y.
Pangborn Corp., 400 Pangborn Blvd., Hagerstown, Md.
Pantex Mfg. Corp., P. O. Box 660, Pawtucket, R. I.
Paragon Electric Co., 1609 Twelfth St., Two Rivers, Wis.
Paragon-Revolute Corp., 61 South Ave., Rochester 4, N. Y.
Parish Co., 3310 Burgundy St.. New Orleans 17, La.
Park-Hill Chemical Corp., 29 Bertel Ave., Mt. Vernon, N. Y.
Parker Boiler Mfg. Co., Sid E., 2035 E. 37th St., Los Angeles 58, Calif.
Parker-Hannifin Corp., Tube & Hose Fittings Div., 17325 Euclid Ave., Cleveland 12.
Parker-Kalon Div., General American Transportation Corp., Clifton, N. J.
Parker Seal Co., 10567 Jefferson Blvd., Culver City, Calif.
Parks-Cramer Co., P. O. Box 444, Fitchburg, Mass.
Parsons Co., Div. of Koehring Co., 200 N. 8th Ave., E., Newton, Ia.
Partlow Corp., The, 203 Campion Rd., New Hartford, N. Y.
Pastushin Industries, Inc., 5651 W. Century Blvd., Los Angeles 45.
Patco Mfg. Co., 231 N. Bread St. Philadelphia, Pa.
Patrol Valve Co., The, 2310 Superior Ave., Cleveland 14, O.
Patten Co., J. V., Sycamore, Ill.
Patterson-Kelley Co., Inc., The, 465 Warren St., East Stroudsburg, Pa.
Paul-Lewis Laboratories, Inc., 4253 N. Port Washington Rd., Milwaukee 12, Wis.
Paul Valve Corp. 683 Third Ave., New York 17, N. Y.
Payne Company, 855 Anaheim Puente Rd., La Puente, Calif.
Peabody Engineering Corp., 232 Madison Ave., New York 16, N. Y.
Pease Co., C. F., The, 2601 W. Irving Park Rd., Chicago 18, Ill.
Peck Co., Cecil C., 14901 Woodworth Rd., Cleveland 10, O.
Peck, Stow & Wilcox Co., Center St., Southington, Conn.
Pecora Inc., 4th St., and Penna. R. R., Philadelphia 40, Pa.
Peden Equipment Co., 4512 Mt. Vernon, Houston, Tex.
Pedrick Tool & Machine Co., 3640 N. Lawrence St., Philadelphia 40.
Pee Cee Tape & Label Co., 521 N. LaBrea, Los Angeles 36, Calif.
Peer, Inc., 1440 Milton St., Benton Harbor, Mich.
Peerless of America, Inc., 5800 N. Pulaski Rd., Chicago 46, Ill.
Peerless Electric Co., 1401 W. Market St., Warren, O.
Peerless Heater Co., The, Div. of The Eastern Foundry Co., Boyertown, Pa.
Peerless Mfg. Div., Dover Corp., P. O. Box 2015, Louisville 10, Ky.
Peerless Products Div., United Cooling Towers, Inc., 1421 E. Washington Ave., North Little Rock, Ark.
Peerless Pump Div., Food Machinery & Chemical Corp., 301 West Ave. 26, Los Angeles 31, Calif.
Penberthy Mfg. Co., Div. of Buffalo Eclipse Corp., 1242 Holden Ave., Detroit 3, Mich.
Penn Boiler & Burner Mfg. Corp., Lancaster, Pa.
Penn Brass & Copper Co., 3800 W. 20th St., Erie, Pa.
Penn Controls, Inc., Goshen, Ind.
Penn Galvanizing Co., 2201 E. Tioga St., Philadelphia 34, Pa.
Penn Instruments Div. of Burgess-Manning Co., 4110 Haverford Ave., Philadelphia 4, Pa.
Penn Mfg. Corp. of Washington, Pa., 380 W. Chestnut St., P. O. Box 484, Washington, Pa.
Pennsalt Chemicals Corp., Three Penn Center, Philadelphia 2, Pa.
Penn Ventilator Co., 3252 Goodman, Philadelphia 40, Pa.
Pennsylvania Engineering Co., 1119-21 N. Howard St., Philadelphia 23, Pa.
Pennsylvania Flexible Metallic Tubing Co., 72nd St. & Powers Lane, Philadelphia 42, Pa.
Pennsylvania Forge Co., Milnor & Bleigh Sts., Philadelphia 35, Pa.
Pennsylvania Furnace & Iron Co., Warren, Pa.
Pennsylvania Pump & Compressor Co., Easton, Pa.
Perfect Circle Corp., Hagerstown, Ind.
Perfecting Service Co., 332 Atlando Ave., Charlotte, N. C.
Perfection Industries Div., Hupp Corp., 1135 Ivanhoe Rd., Cleveland 10, O.
Perfex Plastics, Inc., 2632 S. Dearborn, Chicago, Ill.
Perkins & Son, Inc., B. F., Chicopee St., Holyoke, Mass.
Permacel, New Brunswick, N. J.
Permatex Co., Inc., 300 Broadway, Huntington Sta., Long Island, N. Y.
Permatron Corp., 4840 N. Linder Ave., Chicago, Ill.
Permutit Co., The, Div. of Pfaudler Permutit, Inc., 50 W. 44th St., New York 36, N. Y.
Perolin Co., Inc., The, 350 Fifth Ave., New York 1, N. Y.
Pesco Products Div., Borg-Warner Corp., 24700 N. Miles Rd., Bedford, O.
Peters Co., The, Div. of Toledo Paint & Chemical Co., 33 Blucher St., Toledo, O.
Petersen Mfg. Co., DeWitt, Nebr.
Petro, 3170 W. 106th St., Cleveland 11, O.
Petroleum Solvents Corp., 9 East 45 St., New York 17, N. Y.
Petrometer Corp., 43-22 Tenth St., Long Island City 1, N. Y.
Phelps Dodge Copper Products Corp., 300 Park Ave., New York 22, N. Y.
Phelps Mfg. Co., 715 Thomas St., Little Rock, Ark.
Pheoll Mfg. Co., Industrial Fastener Div., 5700 Roosevelt Rd., Chicago 50, Ill.
Philadelphia Gear Corp., Erie Ave. & G St., Philadelphia 34, Pa.
Philadelphia Hoist Div., Industrial Enterprises, Inc., Doyle & N. Hamilton Sts., Doylestown, Pa.
Philadelphia Pipe Bending Co., 4135-65 N. Fifth St., Philadelphia 40.
Philadelphia Pump Div., American Meter Co., 13500 Philmont Ave., Philadelphia 16, Pa.
Philadelphia Thermometer Co., 6th & Cayuga St., Philadelphia 40, Pa.
Philco Corp., Tioga & C Sts., Philadelphia 34, Pa.
Philips Electronics, Inc., 750 S. Fulton Ave., Mt. Vernon, N. Y.
Phillips & Co., H. A., 3255 W. Carroll Ave., Chicago 24, Ill.
Phillips Cooling Tower Co., Inc., 220 Dupont St., Brooklyn 22, N. Y.
Phillips Drill Co., U. S. No. 12 & Liberty Trail, Michigan City, Ind.
Phoenix Brass Fittings Corp., 354-378 Coit St., Irvington 11, N. J.
Phoenix Iron & Steel Co., Phoenix Steel Tube Div., Phoenixville, Pa.
Phoenix Mfg. Co., Joliet, Ill.
Phoenix Mfg. Co., Front & Chapel, Catasauqua, Pa.
Phoenix Products Co., 4715 N. 27th St., Milwaukee 16, Wis.
Photobell Co., Inc., 43 Vesey St., New York 7, N. Y.
Pick Mfg. Co., West Bend, Wis.
Picker X-Ray Co., 25 S. Broadway, White Plains, N. Y.
Pickett & Eckel, Inc., 1109 S. Fremont, Alhambra, Calif.
Pierce Co., Wm. B., The, 277 Military Rd., Buffalo 7, N. Y.
Piezo Mfg. Corp., 250 Arlington Ave., Staten Island, N. Y.
Pilley Brush Co., Fort Madison, Ia.
Pilot Mfg. Co., P. O. Box 2127, 20433 Earl St., Torrance, Calif.
Pines Engineering Co., Inc., 685 Walnut St., Aurora, Ill.
Pioneer Mfg. Co., 3131 San Fernando Rd., Los Angeles, 65, Calif.
Pioneer Tool Co., 908 10th St., Racine, Wis.
Pipeline Coatings & Engineering Co., 5501 Santa Fe Ave., Los Angeles 58, Calif.
Pipe Line Development Co., 5700 Detroit Ave., Cleveland 2, O.
Pipe Plugs, Inc., Wellington, O.
Piper Tool Co., Inc., 15930 Common Rd., P. O. Box 456, Roseville, Mich.
Piping Specialties, Inc., 114 Liberty St., New York 6, N. Y.
Pittsburgh Brass Mfg. Co., 3155 Penn Ave., Pittsburgh 1, Pa.
Pittsburgh Coke & Chemical Co., Grant Bldg., Pittsburgh, Pa.
Pittsburgh Corning Corp., 1 Gateway Center, Pittsburgh 22, Pa.
Pittsburgh Lectrodryer Div., McGraw-Edison Co., 327 32nd St., Pittsburgh 30, Pa.
Pittsburgh Nipple Wks., Inc., 1455 Spring Garden Ave., Pittsburgh 12, Pa.
Pittsburgh Pipe Coil & Bending Co., 61 Bridge St., Etna Pittsburgh 23, Pa.
Pittsburgh Pipe & Coupling Co., Allison Park, Pa.
Pittsburgh Piping & Equipment Co., 158 49th St., Pittsburgh 1, Pa.
Pittsburgh Plate Glass Co., 632 Ft. Duquesne Blvd., Pittsburgh 22, Pa.
Pittsburgh Steel Co., 800 Grant Bldg., Pittsburgh, Pa.
Pittsburgh Tube Co., 212 Wood St., Pittsburgh 22, Pa.
Pittsburgh Valve Co., Reedsville, W. Va.
Pittsfield Products, Inc., 2275 Platt Rd., Ann Arbor, Mich.
Plant Engineering & Equipment Co., 110-120 Burnett St., Elizabeth, N. J.
Plant Equipment Div., General Blower Co., Inc., 6412 Girard Ave., Philadelphia 31, Pa.
Plasteel Products Corp., McAdam Ave., Washington, Pa.
Plastergon Wall Board Co., Philadelphia Ave., Buffalo 7, N. Y.
Plastex Co., 3232 Cleveland Ave., Columbus 24, O.
Plastic Products Co., 6467 Georgia Ave., Detroit 11, Mich.
Plastics Div., Eastman Chemical Products, Inc., Kingsport, Tenn.
Plasti-Foam Corp., 77 River St., Hoboken, N. J.
Plastiline, Inc., 2 Intervale St., White Plains, N. Y.
Plastipipe, Products of Plastic Process Co., Div. of Monadnock Mills, 10400 Aviation Blvd., Los Angeles 45, Calif.
Plibrico Co., 1800 Kingsbury St., Chicago 14, Ill.
Plicoflex, Inc., 5501 Santa Fe Ave., Los Angeles 58, Calif.
Plummer Spray Equipment Co., 700 Filmore St., Napoleon, O.
Poe Co., C. W., The, 10526 Wilbur Ave., Cleveland 6, O.
Pokorney Mfg. Co., 3117 Clybourn Ave., Chicago 18, Ill.
Polis Mfg. Co., Div. of Gregory Industries, 102-10 Toledo Ave., Lorain, O.
Pollen Ex Co., 303 W. Monroe, Chicago, Ill.

Polygon Plastic Co., Walkerton, Ind.
Polymer Corp., The, 2120 Fairmont Ave., Reading, Pa.
Poole Foundry & Machine Co., 1700 Union Ave., Woodberry, Baltimore 11, Md.
Porce-Lin Tank Lining Co., 456 Milwaukee, Detroit, Mich.
Porous Plastic Filter Co., Glen Cove, N. Y.
Portable Electric Tools, Inc., 320 W. 83rd St., Chicago 20, Ill.
Port City Machine & Tool Co., 3590 Airline Rd., Muskegon, Mich.
Porter-Cable Machine Co., 700 Marcellus St., Syracuse 4, N. Y.
Porter Co., Inc., H. K., Forge & Fittings Div., W-S Fittings Wks., Aldene Rd., P. O. Box 95, Roselle, N. J.
Porter Co., Inc., H. K., Quaker Rubber Div., Tacony & Comly Sts., Philadelphia 24, Pa.
Porter & Co., Inc., H. W., 825 Frelinghuysen Ave., Newark 12, N. J.
Porter Co., R. C., 9354 Floral Ave., Cincinnati 42, O.
Portland Copper & Tank Works, Inc., 80 Second St., South Portland, Me.
Portmar Boiler Co., Inc., 193 Seventh St., Brooklyn 15, N. Y.
Potter & Brumfield Inc., Princeton, Ind.
Potter Company, The, 1950 Sheridan Rd., North Chicago, Ill.
Potts-Farrington Co., 4250 Wissahickon Ave., Philadelphia 29, Pa.
Powell Co., Wm., The, 2525 Spring Grove Ave., Cincinnati 22, O.
Power Engineering Corp., Weirton, W. Va.
Power-Flame Division Inc., Grandview, Mo.
Power Line Fan Co., Inc., Subsidiary of Chelsea Products, Inc., 639 S. Ave., Plainfield, N. J.
Power Strut, Inc., 13 Claflin St., Framingham, Mass.
Powers Regulator Co., 3400 Oakton St., Skokie, Ill.
Prat-Daniel Corp., Thermobloc Div., 2 Meadow St., South Norwalk, Conn.
Pratt Co., Henry, 2222 S. Halsted St., Chicago 8, Ill.
Precision Fan Blade Mfg. Co., Div. of Warrington Co., 4871 San Fernando Rd., West, Los Angeles 39, Calif.
Precision Parts Corp., 400 N. First St., Nashville 7, Tenn.
Precision Paper Tube Co., 2033 W. Charleston St., Chicago 47, Ill.
Precision Thermometer & Instrument Co., 1434 Brandywine St., Philadelphia 30, Pa.
Precision Welder Mfg. Co., 2218 W. Lake St., Chicago 12, Ill.
Preferred Utilities Mfg. Corp., 41 E. 42 St., New York 17, N. Y.
Premier Co., 755 Woodlawn Ave., St. Paul 1, Minn.
Prepo Corp., Edgerton, Wis.
Presstite-Keystone Engineering Products Co., A Div. of American-Marietta Co., 3900 Chouteau Ave., St. Louis 10, Mo.
Pressure Airduct Corp., 8130 N. St. Louis, Skokie, Ill.
Price Brothers, E. Monument Ave., Dayton, O.
Price Pump Co., E. L., Box 357, Sonoma, Calif.
Prier Brass Mfg. Co., 7801 Truman Rd., Kansas City 22, Mo.
Primor Products Div., Borg-Warner Corp., 2011 W. Beecher Rd., Adrian, Mich.
Pritchard & Co. of California, J. F., 4625 Roanoke Parkway, Kansas City 12, Mo.
Process Engineering, Inc., Foot of Chase St., Methuen, Mass.
Procon Pump & Engineering Co., 12721 Capital Ave., Oak Park 37, Mich.
Proctor & Schwartz, Inc., 7th St. and Tabor Rd., Philadelphia 20, Pa.
Production Stamping Co., 2316 S. 24th St., Omaha, Nebr.
Products Research Co., 3126 Los Feliz Blvd., Los Angeles 39, Calif.
Propellair Div., Robbins & Myers Inc., 1345 Lagonda Ave., Springfield, O.
Proportioneers, Inc., Div. of B-I-F Industries, Inc., 381 Harris Ave., Providence, R. I.
Protective Closures Co., Inc., CaPlugs Div., 2207 Elmwood Ave., Buffalo 22, N. Y.
Protokap, Inc., 625 West Building, Houston, Tex.
Proto Tool Co., Div. of Pendleton Tool Industries, Inc., 2209 Santa Fe Ave., Los Angeles, Calif.
Prox Company, Inc., Frank, 1201 S. First St., Terre Haute, Ind.
Pudlo Liquid Filters, Inc., New Holstein, Wis.
Puhl & Hepper Mfg. Co., Inc., 6400 W. Florissant Ave., St. Louis 20.
Pullman Vacuum Cleaner Co., 25 Buick St., Boston 15, Mass.
Pulverizing Machinery Div., Metals Disintegrating Co., Inc., 96 Chatham Rd., Summit, N. J.
Punch-Lok Co., 321 N. Justine St., Chicago 7, Ill.
Pure Carbonic Co., Div. of Air Reduction Co., Inc., 150 E. 42nd St., New York 17, N. Y.
Puritron Corp., 15 Stiles St., New Haven, Conn.
Purolator Products, Inc., 970 New Brunswick Ave., Rahway, N. J.
Pyle-National Co., The, 1373 N. Kostner Ave., Chicago 51, Ill.
Pyott Foundry & Machine Co., 140 Stone St., Aurora, Ill.
Pyramid Instrument Corp., 630 Merrick Rd., Lynbrook, Long Island, N. Y.
Pyramid Plastics, Inc., 554 W. Polk St., Chicago, Ill.
Pyrene CO TWO, U. S. Route 1, Newark, N. J.
Pyrne & Co., Inc., 140 N. Towne Ave., Pomona, Calif.
Pyrolite Products Co., 1221-1231 W. 74th St., Cleveland 2, O.
Pyrometer Instrument Co., Inc., Bergenfield, N. J.

Q

Q-P Mfg. Co., Needham Heights, Mass.
Quaid Fabrications, Inc., State Highway 73, Palmyra, N. J.
Quaker City Iron Wks., Allegheny & Tulip St., Philadelphia 34, Pa.
Quality Specialty Co., Inc., 28th & Lincoln Ave., Camden 5, N. J.
Quelcor, Inc., Front & Broomall Sts., Chester, Pa.
Queen City Engineering Co., Old Pineville Rd., P. O. Box 3103, Charlotte, N. C.
Quickdraft Co., Dueber-Hampden Bldg., P. O. Box 87-K, Canton, O.
Quickwork Div., Whiting Corp., Harvey, Ill.
Quiet Automatic Oil Burner Corp., 33 Bloomfield Ave., Newark 4, N. J.
Quigley Co., Inc., 415 Madison Ave., New York 17, N. Y.

R

R C S Tool Corp., 227-229 East Front St., P. O. Box 661, Bloomington, Ill.
R. I. Humidifier & Ventilating Co., Inc., 65 Landsdowne St., Cambridge 39, Mass.
R.K.L. Valve & Mfg. Co., Route 38 & Rudderow Ave., Maple Shade, N. J.
R-P & C Valve Div., American Chain & Cable Co., Inc., Reading, Pa.
R & R Metal Products, Inc., 11622 S. Western Ave., Chicago 43, Ill.
Radex Corp., 2076 N. Elston Ave., Chicago 14, Ill.
Radiant Devices, 4030 Chouteau Ave., St. Louis, Mo.
Radiant Heat & Cooling Co., 795 Kifer Rd., Santa Clara, Calif.
Radiant Panel Mfg. Co., 9 E. Pearl St., Torrington, Conn.
Radiant-Ray Radiation, Inc., 464 Hartford Ave., Newington, Conn.
Radiant Utilities Corp., 8817-18th Ave., Brooklyn 14, N. Y.
Radiator Specialty Co., 1700-1900 Dowd Rd., Charlotte 1, N. C.
Radio Corp. of America, RCA Victor Div., Front & Cooper, Camden, N. J.
Radio Corp. of America, Industrial Electronic Products, Camden, N. J.
Raisler Corp., Grimes Sprinkler Div., 750 Third Ave., New York 17.
Ramco Equipment Corp., 1373 Lafayette Ave., New York 59, N. Y.
Ramco Mfg. and Engineering Co., 5413 N. E. Columbia Blvd., Portland, Ore.
Ramset Fastening System, Winchester-Western Div., Olin Mathieson Chemical Corp., 12117 Berea Rd., Cleveland 11, O.
Ramsey Products Corp., Broadway, Albany 4, N. Y.
Ramtite Co., The, 2563 W. 18th St., Chicago 8, Ill.
Ranco Inc., 601 W. 5th Ave., Columbus, O.
Randall Graphite Bearings, Inc., Greenlawn & Lake Sts., Lima, O.
Randolph-Page, Inc., 175 Fifth Ave., New York 10, N. Y.
Ransburg Electro-Coating Corp., 3939 West 56th St., Indianapolis 23, Ind.
Ransome Torch & Burner Co., 4030 Hollis St., Emeryville, Calif.
Ra-Rich Mfg. Corp., Holtsville, Long Island, N. Y.
Ravena Iron Co., Ravena, N. Y.
Rawlplug Co., Inc., The, 200 Petersville Rd., New Rochelle, N. Y.
Ray Oil Burner Co., 1301 San Jose Ave., San Francisco 12, Calif.
Raybestos-Manhattan, Inc., 61 Willett St., Passaic, N. J.
Rayfield-Staffco Burner Co., 2066 Canalport, Chicago 8, Ill.
Raymond Div., Combustion Engineering, Inc., 1324 N. Branch St., Chicago, Ill.
Raypak Co., Inc., 4560 Worth St., Los Angeles, Calif.
Reading Tube Corp., 350 - 5th Ave., New York, N. Y.
Ready-Power Co., The, 11231 Freud Ave., Detroit 14, Mich.
Reco Products Div., Recony Corp., 150 Nassau St., New York 38, New York.
Recold Corp., 7250 E. Slauson Ave., Los Angeles 22, Calif.
Recoy Div. of Schemenauer Mfg. Corp., Holland, O.
Rector Mineral Trading Corp., 551 Fifth Ave., New York 17, N. Y.
Rectorseal Div., Rector Well Equipment Co., 2215 Commerce St., Houston 2, Tex.
Red Jacket Co., Inc., 513 Bell Ave., Carnegie, Pa.
Red Jacket Mfg. Co., 1051 S. Rolff St., Davenport, Ia.
Red Spot Electric Co., 7405 S. Tacoma Way, Tacoma 9, Wash.
Redi-Bolt, Inc., 5334 Indianapolis Blvd., East Chicago, Ind.
Redmond Co., Inc., Owosso, Mich.
Reed Mfg. Co., 1425 W. 8th St., Erie, Pa.
Reed Unit-Fans, Inc., 501 N. St. Patrick St., New Orleans 19, La.
Reeves Pulley Co., Div. of Reliance Electric & Engineering Co., Columbus, Ind.
Reeves Steel & Mfg. Co., Div. of Empire-Reeves Steel Corp., Dover, O.
Reflectal Corp., Subsid., Borg-Warner Corp., 200 S. Michigan Ave., Chicago 4, Ill.
Reflectotherm, Inc., 26 East Unversity Ave., Cincinnati 19, O.
Reflin Co., 5660 Kearney Villa Rd., San Diego 11, Calif.
Refractory & Insulation Corp., 120 Wall St., New York 5, N. Y.
Refrigerating Specialties Co., 3004 W. Lexington St., Chicago, Ill.
Refrigeration Appliances, Inc., 917-923 W. Lake St., Chicago, Ill.
Refrigeration Devices Co., 51 E. Centre St., Nutley 10, N. J.
Refrigeration Research, Inc., 9901 East Grand River, Brighton, Mich.
Rega Mfg. Co., 79 Mt. Hope Ave., Rochester 20. N. Y.
Regent Engineering Co., 336 Potter Rd., Wood Dale, Ill.
Register & Grille Mfg. Co., Inc., 70 Berry St., Brooklyn 11, N. Y.
Reichert Float & Mfg. Co., 2242 Smead Ave., Toledo 6, O.
Reid Metal Products, Inc., 2021 N. Lincoln, Burbank, Calif.
Reif-Rexoil, Inc., 37-41 Carroll St., Buffalo 3, N. Y.
Reilly Tar & Chemical Corp., 1615 Merchants Bank Bldg., Indianapolis 4, Ind.
Reiner & Campbell Co., Inc., 19 Euclid Ave., P. O. Box 5035, Newark 5, N. J.
Reinties Co., Geo. P., 2517-19 Jefferson St., Kansas City, Mo.
Reliable Products Mfg. Co., Inc., 123 DeKalb Ave., Brooklyn 17, N. Y.
Reliance Automatic Lighting Co., 1929 Mead St., Racine, Wis.
Reliance Electric & Engineering Co., 24701 Euclid Ave., Cleveland 17.
Reliance Gauge Column Co., 5902 Carnegie Ave., Cleveland 3, O.
Reliance Instrument Mfg. Corp., 190 Glen Cove Ave., Glen Cove, Long Island, N. Y.
Reliance Refrigerating Machine Co., 3401 N. Kedzie Ave., Chicago.
Remco, Inc., Zelienople, Pa.
Remington Air Conditioning Div., Remington Corp., Auburn, N. Y.
Remington Arms Co., Inc., Bridgeport, Conn.
Rempe Co., 342 N. Sacramento Blvd., Chicago 12, Ill.
Rentip, Inc., R.R. No. 4, Osborne Rd., Knoxville, Tenn.
Reproduction Engineering Corp., 301 Main St., Ivorytown, Conn.

Republic Flow Meters Co., 2240 Diversey Pkwy., Chicago 47, Ill.
Republic Mfg. Co., 15655 Brookpark Rd., Cleveland 35, O.
Republic Products Co., 7420 State Rd., Philadelphia 36, Pa.
Republic Rubber Div., Lee Rubber & Tire Corp., Youngstown 1, O.
Republic Steel Corp., Republic Bldg., Cleveland 1, O.
Research Appliance Co., Rt. 8 at Craighead Rd., Box 307, Allison Park, Pa.
Research-Cottrell, Inc., Bound Brook, N.J.
Research Products Corp., 1015 E. Washington Ave., Madison 10, Wis.
Research Vacuum Supply Co., 6712 N. Clark St., Chicago 26, Ill.
Resisto Pipe & Valve Co., 262 Bridge St., East Cambridge, Mass.
Resistoflex Corp., Roseland, N. J.
Resolite Corp., Zelienople, Pa.
Reuland Electric Co., 3001 W. Mission Rd., Alhambra, Calif.
Revcor Inc., Carpentersville, Ill.
Revere Copper & Brass, Inc., 230 Park Ave.. New York 17, N. Y.
Revere Copper & Brass, Inc., Foil Div., 196 Diamond St., Brooklyn 22, N. Y.
Rex Clay Products Co., 7717 Lyndon, Detroit 38, Mich.
Rex Roto Corp., 1109 Decker Rd., Walled Lake, Mich.
Rex Welder Company, 1200-1248 Milton St., Benton Harbor, Mich.
Reynolds Electric Co., 3000 River Rd., River Grove, Ill.
Reynolds Mfg. Co., The, Box 333, Comstock Park, Mich.
Reynolds Metals Co., West Broad St., Richmond 18, Va.
Reynolds Water Conditioning Co., 12100 Cloverdale Ave., Detroit 4, Mich.
Reznor Mfg. Co., 51 Union St., Mercer 8, Pa.
Rheem Mfg. Co., 7600 Kedzie Ave., Chicago 29, Ill.
Rhoads Engineering Corp., 9063 Washington Blvd., Culver City, Calif.
Rhoads & Sons, J. E., 2100 W. 11th St., Wilmington 99, Del.
Rhode Island Fittings Co., 355 Dexter St., Providence 7, R. I.
Rhodes, Inc., M. H., 30 Bartholomew Ave., Hartford, Conn.
Rhopac, Inc., 3425 Cleveland St., Skokie, Ill.
Rich Mfg. Co. of California, 3851 Santa Fe Ave., Los Angeles 58, Calif.
Richkraft Co., 510 N. Dearborn, Chicago, Ill.
Richmond Engineering Co., 7th and Hospital Sts., Richmond, Va.
Richmond Plumbing Fixtures Div., Rheem Mfg. Co., Box 111, Metuchen, N. J.
Richmont, Inc., 922 S. Myrtle Ave., Monrovia, Calif.
Richo Plastic Co., 4445 West Fullerton Ave., Chicago 39, Ill.
Ric-wiL, Inc., Barberton, O.
Ridge Tool Co., Clark St., Elyria, O.
Rigidbilt Inc., 2850 W. Fulton St., Chicago 12, Ill.
Rigidized Metals Corp., 721 Ohio St., Buffalo 3, N. Y.
Riley Stoker Corp., 9 Neponset St., Worcester, Mass.
Rinehart Inc., 511-513 Main St., Richmond, Ind.
Ripley Co., Inc., Middletown, Conn.
Rite Engineering & Mfg. Corp., 9441 Washburn Crossing Rd., Downey, Calif.
Ritter Pattern & Casting Co., Inc., 120 Walker St., New York 13, N. Y.
Rittling Corp., The, Rittling Bldg., Buffalo 5, N. Y.
Robbins & Myers, Inc., 1345 Lagonda Ave., Springfield, O.
Roberson, Inc., 1539 E. 103rd St., Seattle 55, Wash.
Robert Mfg. Co., 9035 Venice Blvd., Los Angeles 34, Calif.
Roberts-Gordon Appliance Corp., 44 Central Ave., Buffalo 6, N. Y.
Roberts Tube Div., Prestyle Mfg. Co., 6100 Ranspach Ave., Detroit, Mich.
Robertson Co., H. H., 2400 Farmers Bank Bldg., Pittsburgh 22, Pa.
Robinson Aviation, Inc., Teterboro Air Terminal, Teterboro, N. J.
Robinson Clay Product Co., The, 65 W. State St., Akron 9, O.
Robinson Industries, Coleman, Mich.
Robinson Ventilating Co., Zelienople, Pa.
Robvon Backing Ring Co., 675 Garden St., Elizabeth 2, N. J.
Rochester Lead Works, Inc., 380 Exchange St., Rochester 8, N. Y.
Rochester Mfg. Co., Inc., 63 Rockwood St., Rochester 10, N. Y.
Rock Island Register Co., 2435 Fifth Ave., Rock Island, Ill.
Rockford Brass Works, 700 S. Main, Rockford, Ill.
Rockford Screw Products Co., 2501 Ninth St., Rockford, Ill.
Rockwell Co., W. S., 2545 Eliot St., Fairfield, Conn.
Rockwell Mfg. Co., Meter & Valve Div., 400 N. Lexington Ave., Pittsburgh 8, Pa.
Rockwood Sprinkler Co., 38 Harlow St., Worcester 5, Mass.
Roddick Tool Co., P. O. Box 109, Anaheim, Calif.
Roessing Mfg. Co., 1616 Noble St., Sharpsburg, Pittsburgh 15, Pa.
Roll-Weld Pipe & Tube, Inc., 2961 Old Kings Rd., P. O. Box 1234, Jacksonville, Fla.
Roller Bearing Co. of America, Sullivan Way, West Trenton, N. J.
Rome-Turney Radiator Co., Canal St., Rome, N. Y.
Ronningen-Petter Co., 330 S. 27th St., Vicksburg, Mich.
Roots-Connersville Blower, Div. of Dresser Industries, Inc., 900 W. Mount St., Connersville, Ind.
Roper Hydraulics, Inc., 340 Blackhawk Park Ave., Rockford, Ill.
Rosebraugh Co., W. W., P. O. Box 14, 680 17th St., S. E., Salem, Ore.
Ross Engineering Div., J. O., Midland-Ross Corp., 444 Madison Ave., New York 22, N. Y.
Ross Sprinkler Co., 4333 Temple City Blvd., Rosemead, Calif.
Ross Valve Mfg. Co., Inc., 6 Oakwood Ave., Troy, N. Y.
Rotary Concrete Drill Co., 650 S. Arroyo Pkwy., Pasadena, Calif.
Rotary Seal Div., Muskegon Piston Ring Co., 2020 N. Larrabee St., Chicago 14, Ill.
Roth Co., Roy E., 2420-A 24th Ave., Rock Island, Ill.
Rotherm Engineering Co., Inc., 7280 W. Devon, Chicago, Ill.
Rotometals, 980 Harrison St., San Francisco 7, Calif.
Rotor Tool Co., 26300 Lakeland Blvd., Cleveland 32, O.
Rotron Controls Corp., Woodstock, N. Y.
Round Oak Co., Inc., Dowagiac, Mich.
Royalton Co., Inc., Gasport, N. Y.
Royco Instruments, 874 Fabian Way, Palo Alto, Calif.
Royersford Foundry & Machine Co., Inc., 101-131 Main St., Royersford, Pa.
Rubatex Div., Great American Industries, Inc., Bedford, Va.
Rubber & Asbestos Corp., 225 Belleville Ave., Bloomfield, N. J.
Rubber & Plastics Compound Co., 10 Rockefeller Plaza, New York 20, N. Y.
Rubber Products Div., Parker-Hannifin Corp., 17325 Euclid Ave., Cleveland 12, O.
Ruberoid Co., 500 Fifth Ave., New York 36, N. Y.
Ruby Chemical Co., 68-70 McDowell St., P. O. Box 1108, Columbus 16, O.
Ruemelin Mfg. Co., 3860 N. Palmer St., Milwaukee 12, Wis.
Ruggles-Klingemann Mfg. Co., 110 Tremont St., Boston, Mass.
Ruppright's Rotary Roof Cooler, Box 43555, Los Angeles 43, Calif.
Russell, Burdsall & Ward Bolt & Nut Co., Port Chester, N. Y.
Russell Co., F. C., The, 1100 Chester Ave., Clevelend 1, O.
Rusticide Products Co., 3125 Perkins Ave., Cleveland 14, O.
Rust-Oleum Corp., 2425 Oakton St., Evanston, Ill.
Ruthman Machinery Co., 1809 Reading Rd., Cincinnati 2, O.
Rutland Fire Clay Co., Curtis Ave., Rutland, Vt.
Ruud Mfg. Co., Kalamazoo, Mich.
Ryerson & Son, Inc., Joseph T., 2558 W. 16th, Chicago, Ill.

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S&C Mfg. Co., 6245 Wiehe Rd., Cincinnati, O.
SKF Industries, Inc., Front St. & Erie Ave., Philadelphia 32, Pa.
S.O.S. Products Co., Inc., 346 Cumberland St., Brooklyn 38, N. Y.
Sac Tool Mfg. Co., 1913 Washington Ave., St. Louis 3, Mo.
Safety Industries, Inc., 1187 Dixwell Ave., Hamden, Conn.
St. Clair Rubber Co., 440 E. Jefferson, Detroit, Mich.
St. Louis Blow Pipe & Heater Co., Div. of Young Sales Corp., 1948 N. 9th St., St. Louis 6.
St. Louis Tool Co., 6100 Prescott St., St. Louis 15, Mo.
St. Paul Corrugating Co., S. Wabasha and Water Sts., St. Paul 1.
St. Piere Chain Corp., 50 Frank St., Worcester, Mass.
Sales & Co., Murray W., 801 W. Baltimore Ave., Detroit 2, Mich.
Salina Metal Products Co., 9th and Bishop, Salina, Kan.
Sall Bros. Co., 2320 Kishwaukee St., Rockford, Ill.
Salsbury Corp., 1161 E. Florence Ave., Los Angeles 1, Calif.
Salton Mfg. Co., Inc., 312 E. 95th St., New York 28, N. Y.
Sampson Scientific Co., Div. of the Sampson Chemical & Pigment Corp., 2830 W. Lake St., Chicago 12, Ill.
San Angelo Foundry & Machine Co., P. O. Box 1152, San Angelo, Tex.
Sandee Mfg. Co., 5050 W. Foster Ave., Chicago 30, Ill.
Sandstrom Products Co., Port Byron, Ill.
Sangamo Electric Co., 1301 N. 11th St., Springfield, Ill.
Saran Lined Pipe Co., 2415 Burdette Ave., Ferndale 20, Mich.
Sarco Co., Inc., 635 Madison Ave., New York 22, N. Y.
Sarcotherm Controls, Inc., 635 Madison Ave., New York 22, N. Y.
Sargent Enginairing Co., 1375 E. 45th St., Cleveland 3, O.
Sauereisen Cements Co., 1045 North Canal St., Pittsburgh 15, Pa.
Saunders Mfg. Co., 25 Atherton St., Yonkers, N. Y.
Saussé & Co., M. W., 636 N. Robertson Blvd., Los Angeles 46, Calif.
Saverite Engineering Co., 158 - 14th St., Hoboken, N. J.
Sawhill Tubular Products, Inc., P. O. Box 546, Sharon, Pa.
Scaico Controls Inc., P. O. Box 41, Cooper St., Delanco, N. J.
Scaife Co., 26 Ann St., Oakmont, Pa.
Schade Valve Mfg. Co., 2527 N. Bodine St., Philadelphia 33, Pa.
Schaevitz Engineering, P. O. Box 505, Camden 1, N. J.
Schaible Co., The, 5801 Mariemont Ave., Mariemont 27, O.
Scharer & Co., Ray A., 17411 E. Warren, Detroit 24, Mich.
Scharf Mfg. Co., J. H., 6120 Binney St., Omaha, Nebr.
Schatz Mfg. Co., The, Fairview, Poughkeepsie, N. Y.
Schaub Engineering Co., Fred H., 2110 S. Marshall Blvd., Chicago 23.
Schaul Mfg. Co., 6300 Rowland Ave., Cleveland 27, O.
Schemenauer Mfg. Corp., Holland, O.
Schieren Co., Chas. A., 1300 Walnut St., Camden 3, N. J.
Schlegel Mfg. Co., 1555 Jefferson Rd., P. O. Box 197, Rochester 1, N. Y.
Schild Mfg. Co., 4127 — N. 60th St., Milwaukee 16, Wis.
Schmieg Industries, Inc., P. O. Box 4701, Detroit 34, Mich.
Schnacke, Inc., 1101 N. Governor St., Evansville, Ind.
Schneible Co., Claude B., P. O. Box 296, Roosevelt Pk. Annex, Detroit 32, Mich.
Schoedinger, Inc., F. O., 322-358 Mt. Vernon Ave., Columbus 16, O.
Schramm, Inc., West Chester, Pa
Schroeder Brothers Corp., Nichol Ave., P. O. Box 72, McKees Rocks, Pa.
Schurs Oil Burner Co., 8500 Zamore Ave., Los Angeles 1, Calif.
Schutte and Koerting Co., Cornwells Heights, Bucks County, Pa.
Schwartz Chemical Co., Inc., 50-01 2nd St., Long Island City 1, N. Y.
Schwitzer Corp., 1125 Massachusetts Ave., Indianapolis 7, Ind.
Sciaky Bros. Inc., 4915 W. 67th St., Chicago 38, Ill.
Scientific Instrument Co.. 617 Howard St., Detroit 26, Mich.
Scott, Inc., H. H., Inst. Div., 111 Powder Mill Rd., Maynard, Mass.
Scott Valve Mfg. Co., 3963 McKinley Ave., Detroit 8, Mich.
Scovill Mfg. Co., 99 Mill St., Waterbury 20, Conn.
Screw Machine Products Co., 7737 N. E. Killingsworth, P. O. Box 7497, Portland 20, Ore.
Scully Signal Co., 174 Green St., Melrose 76, Mass.
Sealed Power Corp., 2001 Sanford St., Muskegon 61, Mich.
Sealed Unit Parts Co., Inc., 1178 E. 180th St., New York 60, N. Y.
Sealmaster Bearings, Div. of Stephens-Adamson Mfg. Co., 47 Ridgeway Ave., Aurora, Ill.
Sealol Corp., Warwick Industrial Park, Providence 5, R. I.
Seamless Rubber Co., The, F.O.S. Industrial Tape Div., 464 Congress Ave., New Haven 3, Conn.

Seamlex Co., Inc., 41-23 24th St., Long Island City 1, N. Y.
Seamon Snap Valve Co., Jct. Rt. 9 & 30, Boston & Worcester Turnpike, Westboro, Mass.
Security Valves Corp., 541 W. Garfield, Glendale, Calif.
Seelye Craftsmen, The, 984 Central Ave., Minneapolis, Minn.
Seiberling Rubber Co., Plastics Div., Newcomerstown, O.
Selas Corp. of America, Dresher 5, Pa.
SelecTemp Div., Iron Fireman Mfg. Co., 3170 W. 106th St., Cleveland 11, O.
Self Cleaning Strainer Co., 4545 Southwest Highway, Oak Lawn, Ill.
Sellers Engineering Co., 4874-76 N. Clark St., Chicago 40, Ill.
Sellers Injector Corp., 1606 Hamilton St., Philadelphia 30, Pa.
Semet-Solvay Engineering Div., Allied Chemical Corp., 40 Rector St., New York 6, N. Y.
Senna Mfg. Co., 732 N. Napa St., Spokane 24, Wash.
Senrac Industries, Applegate Rd., Madison, Wis.
Serdex, Inc., 12 Bowdoin Square, Boston 14, Mass.
Sethco Mfg. Co., 2284 Babylon Turnpike, Merrick, N. Y.
Seton Name Plate Co., 431-B W. Rock Ave., New Haven 15, Conn.
Sette Products Co., 1241 High St., Oakland 1, Calif.
Sexauer Mfg. Co., Inc., J. A., Dept. 19, 2503-05 3rd Ave., New York 51, N. Y.
Shafer Bearing, Div. of Chain Belt Co., P. O. Box 57, Curtiss & Belmont, Downers Grove, Ill.
Shahmoon Industries, Inc., Warren Foundry & Pipe Div., 55 Liberty St., New York 5, N. Y.
Shakeproof Div., Illinois Tool Wks., St. Charles Rd., Elgin, Ill.
Shallcross Controls, Inc., P. O. Box 497, Markesan, Wis.
Shank Co., Cyrus, 4646 W. 12th Pl., Chicago 50, Ill.
Sharon Steel Corp., Sharon, Pa.
Shaw Co., Benjamin F., Second & Lombard Sts., Wilmington 99, Del.
Shaw-Kendall Engineering Co., 128 S. Superior St., Toledo 4, O.
Shaw-Perkins Mfg. Co., 201 E. Carson St., Pittsburgh 19, Pa.
Sheldon & Co., Inc., M. L., 350 Lexington Ave., New York 16, N. Y.
Sheldon Equipment Co., E. H., 716 Nims St., Muskegon, Mich.
Shell Oil Co., Lubricants Dept., 41-70 Main St., Flushing 55, N. Y.
Sherwin-Williams Co., The, 101 Prospect Ave., N. W., Cleveland, O.
Sherwood Water Treatment Co., Inc., Beverly, N. J.
Shutt Process Equipment Corp., 1421 Norman Place, St. Louis 22, Mo.
Sier Bath Gear & Pump Co., Inc., 9261 Hudson Blvd., North Bergen, N. J.
Sight Feed Generator Co., P. O. Box 38, West Alexandria, O.
Signal Electric Div. of King-Seeley Corp., Menominee, Mich.
Sikes Co., S. R., 1028 S. Third St., Minneapolis 15, Minn.
Silent Automatic Products, 3121 W. 106th St., Cleveland 11, O.
Silent Glow Oil Burner Co., 850 Windsor St., Hartford, Conn.
Silvercote Products, Inc., 161 E. Erie St., Chicago 11, Ill.
Silvercraft, Inc., 2925 Garfield Ave., Louisville, Ky.
Simplaire 521 Fifth Ave., New York 17, N. Y.
Simplex Ceiling Corp., 552 W. 52nd St., New York 19, N. Y.
Simplex Mfg. Co., 198 N. Main St., Fond du Lac, Wis.
Simplex Oil Heating Corp., 7901 Oxford, Philadelphia 11, Pa.
Simplex Valve & Meter Co., 7 E. Orange St., Lancaster, Pa.
Simpson Electric Co., 5208 W. Kinzie, Chicago, Ill.
Sims Co., 18th & Whitley Sts., Erie, Pa.
Sims Pump Valve Co., 1314 Park Ave., Hoboken, N. J.
Sinclair-Collins Valve Co., 454 Morgan Ave., Akron 11, O.
Sioux Steel Co., P. O. Box 898, Sioux Falls, S. D.
Sipe & Co., James B., Box 8010, Pittsburgh 16, Pa.
Sirod Corp., 1263 N. 70th St., Milwaukee 13, Wis.
Skidmore Corp., P. O. Box 309, St. Joseph, Mich.
Skil Corp., 5033 Elston Ave., Chicago 30, Ill.
Skinner Co., M. B., 3502 W. Sample, South Bend 21, Ind.
Skinner Electric Valve Div., The Skinner Chuck Co., Edgewood Ave., New Britain, Conn.
Skinner Engine Co., 337 W. 12th St., Erie, Pa.
Skinner Irrigation Co., 121 E. Canal St., Troy, O.
Skuttle Mfg. Co., Milford, Mich.
Skyline Industries Sales, Inc., Titusville, Pa.
Slant-Fin Radiator Corp., 87-49 130th St., Richmond Hill 18, N. Y.
Sloane Mfg. Co., 7606 No. Clybourn Ave., Sun Valley, Calif.
Sly Mfg. Co., W. W., 4700 Train Ave., P. O. Box 5939, Cleveland 1, O.
Small Motors, Inc., 2076 Elston Ave., Chicago 14, Ill.
Smith-Blair, Inc., 535 Railroad Ave., S. San Francisco, Calif.
Smith Bros. Co., 414 S. Harvey, Oak Park, Ill.
Smith Chemical Co., E. W., 15020 E. Proctor Ave., La Puente, Calif.
Smithco Engineering, Inc., Cooling Tower Div., 3401 W. 11th St., P. O. Box 7264, Houston, Tex.
Smith Co., Inc., H. B., The, 64 Main St., Westfield, Mass.
Smith Co., J. B., 3327 B St., Philadelphia 34, Pa.
Smith Co., S. Morgan, Lincoln & Hartley Sts., York, Pa.
Smith Corp., A. O., 3533 N. 27th St., Milwaukee 1, Wis.
Smith Corp., A. O., Electric Motor Div., 531 No. 4th St., Tipp City, O.
Smith Corp., A. O., Permaglas Div., Kankakee, Ill.
Smith Filter Corp., 1603-2nd Ave., Moline, Ill.
Smith & Kanzler Corp., E. Linden Ave., Linden, N. J.
Smith Products Co., 43642 Nine Mile Rd., Northville 1, Mich.
Smith Twin Tubular Boiler Co., Inc., Cottman St. at State Rd., Philadelphia 35, Pa.
Smith Welding Equipment Corp., 2619 S. E. Fourth St., Minneapolis 14, Minn.
Smolensky Valve Co., 940 Broadway, Bedford, O.
Smooth-On Mfg. Co., 568-574 Communipaw Ave., Jersey City 4, N. J.
Snap-on Tools Corp., Kenosha, Wis.
Snap-Tite, Inc., Union City, Pa.
Socony-Mobil Oil Co., Inc., 150 E. 42nd St., New York 17, N. Y.
Sola Electric Co., 4633 W. 16th St., Chicago 50, Ill.
Solar Aircraft Co., 2200 Pacific Highway, San Diego 12, Calif.
Soldering Specialties Co., 19 Chatam Rd., Summit, N. J.
Solfo Paint Mfg. Co., Trenton 3, N. J.
Solvay Process Div., Allied Chemical Corp., 61 Broadway, New York 6, N. Y.
Solvent Service, Inc., P. O. Box 228, Painesville, O.
Somers Corp., 6063 Wabash Ave., Detroit 8, Mich.
Somerville Iron Works, Inc., Chattanooga, Tenn.
Sonneborn Sons, Inc., L., Building Products Div., 404 Fourth Ave., New York 16, N. Y.
Sonner Burner Co., 412-420 E. 6th Ave., Winfield, Kans.
Sonoco Products Co., Construction Products Div., Hartsville, S. C.
Sostman & Co., H. E., 347 E. Lincoln Ave., Cranford, N. J.
Sound Reduction Corp., 133 Pitkin St., East Hartford, Conn.
South Bend Air Products, Inc., 415 S. Saint Joseph St., South Bend 1, Ind.
South Chester Corp., Southco Div., Lester, Pa.
South Chester Tube Co., Finance Bldg., Philadelphia 2, Pa.
Southern Name Plate Shop, 2429 Athis St., New Orleans, La.
Southern Pipe & Casing Co., Div. of U. S. Industries, Inc., P. O. Box C, Azusa, Calif.
Southern Plastics Co., 408 Pendleton, Columbia, S. C.
Southport Paint Co., Div. Wesson Oil & Snowdrift Co., Inc., Savannah, Ga.
Southwestern Plastic Pipe Co., P. O. Box 117, Mineral Wells, Tex.
Southworth Machine Co., 30 Warren Ave., Portland, Me.
Span Brass Mfg. Co., Wilmot St., Otsego, Mich.
Spang-Chalfant, Div. of The National Supply Co., P. O. Box 416, Pittsburgh 30, Pa.
Sparkler Mfg. Co., Mundelein, Ill.
Spartan Convector Co., Inc., 52-55 74th St., Maspeth 78, N. Y.
Spartan Tool Co., 1918 Columbia Ave., Chicago 26, Ill.
Sparton Corp., 2301 E. Michigan, Jackson, Mich.
Special Chemicals Corp., 100 S. Water St., Ossining, N. Y.
Special Screw Products, Box 391, Bedford, O.
Speco, Inc., 7308 Associate Ave., Cleveland 9, O.
Speedline Stainless Steel Fittings Div., Horace T. Potts Co., Erie Ave. & "D" St., Philadelphia 34, Pa.
Speed Selector Inc., P. O. Box 312, Chagrin Falls, O.
Speedway Mfg. Co., Div. of Thor Power Tool Co., 1834 S. 52nd Ave., Chicago (Cicero), Ill.
Speed-Seam Co., 820 N. Walcott, Chicago 22, Ill.
Spence Engineering Co., Inc., 32 Grant St., Walden, N. Y.
Spencer Heater, Lycoming Div., Avco Mfg. Corp., 652 Oliver St., Williamsport, Pa.
Spencer Thermostat Div., Metals & Controls Corp., 34 Forest St., Attleboro, Mass.
Spencer Turbine Co., 486 New Park Ave., Hartford 6, Conn.
Sperti Faraday, Inc., 1322 E. Church St., Adrian, Mich.
Sperti Faraday, Inc., 720 Grand St., Hoboken, N. J.
Spincraft, Inc., 4158-L W. State St., Milwaukee, Wis.
Spindler & Sons, Inc., August, Mercer St., Jersey City 2, N. J.
Sporlan Valve Co., 7525 Sussex Ave., St. Louis 17, Mo.
Sprague Electric Co., Marshall St., North Adams, Mass.
Spray Engineering Co., 100 Cambridge St., Burlington, Mass.
Spraying Systems Co., 3219 Randolph St., Bellwood, Ill.
Sprayo-Flake Co., 2715 Irving Park Blvd., Chicago 18, Ill.
Spring Packing Corp., 332 S. Michigan Ave., Chicago, Ill.
Springfield Boiler Co., 1939 E. Capitol Ave., Springfield, Ill.
Springload Mfg. Corp., 6332 Maynard Ave., Seattle 8, Wash.
Sprout, Waldron & Co., Inc., Muncy, Pa.
Spurgeon Co., 23501 Hoover Rd., Warren, Mich.
Square D Co., 6060 Rivard St., Detroit 11, Mich.
Square D Co., Industrial Controller Div., 4041 N. Richards St., Milwaukee 12, Wis.
Squires Co., C. E., The, 18502 Syracuse Ave., Cleveland 10, O.
Stainless Processing Div., Wall Colmonoy Corp., 19345 John R St., Detroit, Mich.
Stalwart Rubber Co., The, 381 Northfield Rd., Bedford, O.
Stamco Inc., New Bremen O.
Stanat Mfg. Co., Inc., 536 Shames Dr., Westbury, N. Y.
Standard Asbestos Mfg. Co., 860 W. Evergreen Ave., Chicago 22, Ill.
Standard Electric Mfg. Co., West Berlin, N. J.
Standard Engineering Wks., 289 Roosevelt Ave., Pawtucket, R. I.
Standard Fuel Engineering Co., 667 Post Ave., S., Detroit 17, Mich.
Standard Instrument Div., Heat Timer Corp., 657 Broadway, New York 1, N. Y.
Standard Machine & Mfg. Co., 704 East Big Bend Blvd., St. Louis 22, Mo.
Standard Oil Co. of California, 225 Bush St., San Francisco, Calif.
Standard Oil Co. of Indiana, 910 S. Michigan Ave., Chicago, Ill.
Standard Pressed Steel Co., Box 810, Jenkintown, Pa.
Standard Refrigeration Co., 3535 W. Fillmore St., Chicago 24, Ill.
Standard Stamping & Perforating Co., 3151 W. 49th Pl., Chicago 32.
Standard Tube Co., The, 24400 Plymouth Rd., Detroit 39, Mich.
Stanley Electric Tools, Div. of The Stanley Works, Myrtle St., New Britain, Conn.
Stanley Works, The, 195 Lake St., New Britain, Conn.
Staples & Pfeiffer, 528 Bryant St., San Francisco 7, Calif.
Sta-Rite Products, Inc., 305 S. 8th St., Delavan, Wis.
Star Expansion Industries Corp., Mountainville, N. Y.
Star-Kimble Electric Co., Div. of Safety Industries, Inc., 1187 Dixwell Ave., Hamden, Conn.
Starline Co., 119 Franklin Ave., Dayton, O.
Star Stainless Screw Co., 646 Union Blvd., Paterson 2, N. J.
Star Tubular Products Co., 4747 S. Richmond St., Chicago, Ill.
Star Woolen Co., Cohoes, N. Y.
Steam Turbine Div., Worthington Corp., Wellsville, N. Y.
Stearns Co., N. C., P. O. Box 1234, Shreveport, La.
Stedco Products, 71 Lehigh St., Wilkes-Barre, Pa.
Steel City Electric Co., 1207 Columbus Ave., Pittsburgh, Pa.
Steelcote Mfg. Co., 3418 Gratiot St., St. Louis, Mo.
Steel Improvement & Forge Co., The, 970 E. 64th St., Cleveland 3, O.

Steel Products Engineering Co., The, 1205 W. Columbia St., Springfield, O.
Steffan Mfg. Corp., 290 W. 10th St., Salem, O.
Steinen Mfg. Co., Wm., 43 Bruen St., Newark 5, N. J.
Sterlairco, Inc., 265 N. Elm St., Westfield, Mass.
Sterling, Inc., 5200 W. Clinton Ave., Milwaukee 18, Wis.
Sterling Electric Motors, Inc., 5401 Telegraph Rd., Los Angeles 22, Calif.
Sterling Engineering & Mfg. Corp., 114 Business St., Hyde Park 36, Mass.
Sterling Radiator Co., Inc., 260 N. Elm St., Westfield, Mass.
Sterns-Flinn Corp., 30 Church St., New York 7, N. Y.
Stevens Mfg. Co., Inc., P. O. Box 1007, Mansfield, O.
Stewart-Hall Chemical Corp., 17 North West St., Mt. Vernon, N. Y.
Stewart Ice Machine Co., 1282 W. 1st St., Pomona, Calif.
Stewart-Warner Corp., Heating & Air Conditioning Div., Lebanon, Ind.
Stewart-Warner Corp., South Wind Div., 1514 Drover St., Indianapolis, Ind.
Stickle Steam Specialties Co., 2215 Valley Ave., Indianapolis 18, Ind.
Stic-Klip Mfg. Co., Inc., 112 Regent St., Cambridge 40, Mass.
Stiles Karlsonite Corp., 1550 Grand Ave., Waukegan, Ill.
Stillwater Clay Products Co., The, 3334 Prospect Ave., Cleveland 15.
Stockham Valves & Fittings, Box 2592, Birmingham 2, Ala.
Stockmeister & Prins, Wellston, O.
Stoddard Industries, Inc., 1545 N. Kingsbury, Chicago 22, Ill.
Stokes Molded Products, Div. of Electric Storage Battery Co., Taylor & Webster, Trenton 4, N. J.
Stout & Sons, David, 7016-7020 Manchester Blvd., St. Louis 17, Mo.
Stover Water Softener Co., 10 State Ave., St. Charles, Ill.
Stow Mfg. Co., 445 State St., Binghamton, N. Y.
Strahman Valves, Inc., 16-22 Hudson St., New York 13, N. Y.
Straitsville Brick Co., New Straitsville, O.
Stratford Pipe Scalloper Co., 1105 Ewing Ave., Clearwater, Fla.
Strong, Carlisle & Hammond, 1392 W. Third St., Cleveland 13, O.
Structural Fibers, Inc., Fifth Ave., Chardon, O.
Struthers-Dunn, Inc., Lamb's Rd., Pitman, N. J.
Struthers Wells Corp., Warren, Pa.
Sturtevant Co., P. A., Addison, Ill.
Sudbury Laboratory, South Sudbury, Mass.
Sulflo, Inc., 1143 E. Jersey St., Elizabeth 4, N. J.
Sullivan Valve & Engineering Co., 1400 E. Second St., Butte, Mont.
Summit Products Co., Uniontown, Pa.
Sumo Pumps, Inc., 23 Brown House Rd., Stamford, Conn.
Sundial Electric Co., 87-49 130th St., Richmond Hill 18, N. Y.
Sundstrand Hydraulic Div., 2210 Harrison Ave., Rockford, Ill.
Sun-Fire Stoker Corp., New Albany, Ind.
Sun Oil Co., 1608 Walnut St., Philadelphia 3, Pa.
Sun-Ray Burner Mfg. Corp., 139-24 Queens Blvd., Jamaica 35, N. Y.
Sunwarm, Inc., P. O. Box 263, Kingsport, Tenn.
Super Radiator Corp., 6714 Walker St., St. Louis Park, Minneapolis 26, Minn.
Super Slugger Co., 1020 Broadway, Bedford, O.
Super Tool Co., 21650 Hoover Rd., Detroit 13, Mich.
Superior Clay Corp., The, Uhrichsville, O
Superior Combustion Industries, Inc., Times Tower, Times Sq., New York 36, N. Y.
Superior Pneumatic & Mfg. Co., Inc., 4758 Warner Rd., Cleveland 25, O.
Superior Tube Co., Box 191, Norristown, Pa.
Superior Valve and Fittings Co., 1509 W. Liberty Ave., Pittsburgh 26, Pa.
Supreme Electric Products Corp., 194 Vassar St., Rochester 7, N. Y.
Surface Chemicals, Inc., 1101 Thompson Ave., McKees Rocks, Pa.
Surface Combustion Corp., 2375 Dorr St., Toledo 1, O.
Sutorbilt Corp., Subsidiary of Fuller Co., 2966 E. Victoria St., Compton, Calif.
Sutton Corp., O. A., The, 1812 W. Second St., Wichita 2, Kan.
Swaby Mfg. Co., 3818 W. Armitage Ave., Chicago 47, Ill.
Swaine Mfg. Co., Fred J., 1300 N. Seventh St., St. Louis 6, Mo.
Swan Humidifier Co., 149 Bath St., Ballston Spa, N. Y.
Swartwout Co., The, 18511 Euclid Ave., Cleveland 12, O.
Swepco Tube Corp., 1 Clifton Blvd., Clifton, N. J.
Swift & Co., Adhesive Products Dept., 4115 S. Packers Ave., Chicago 9, Ill.
Swift Lubricator Co., Inc., 19 James Bldg., Elmira, N. Y.
Swift Mfg. Co., Inc., 31241 Stephenson Highway, Royal Oak, Mich.
Symmons Mfg. Co., 445 C St., Boston 10, Mass.
Synchronous Flame, Inc., Walworth, Wis.
Synchro-Start Products, Inc., 8151 N. Ridgeway Ave., Skokie, Ill.
Syncromatic Corp., Watertown, Wis.
Syntron Co., 161 Lexington Ave., Homer City, Pa.
Syrall Mfg. Co., 511 N. State St., Syracuse 3, N. Y.

T

Taber Pump Co., 272 Elm St., Buffalo 3, N. Y.
Taco Heaters, Inc., 1160 Cranston St., Cranston 9, R. I.
Taft-Jenkins Co., Inc., 27 Sargeant St., Holyoke, Mass.
Taller & Cooper, Inc., 75 Front St., Brooklyn 1, N. Y.
Talon Tools, Inc., North Arlington, N. J.
Tamms Industries Co., 228 N. LaSalle St., Chicago 1, Ill.
Tapecoat Co., The, 1523 Lyons St., Evanston, Ill.
Taylor Engineering Corp., 6500 Epworth Blvd., Detroit 10, Mich.
Taylor Forge & Pipe Wks., P. O. Box 485, Chicago 90, Ill.
Taylor Instrument Companies, 95 Ames St., Rochester 1, N. Y.
Taylor Sons Co., The Charles, 710 Burns St., Cincinnati 14, O.
Taylor-Winfield Corp., 1052 Mahoning Ave., N. W., Warren, O.
Technical Filter Co., 2719 S. Poplar Ave., Chicago, Ill.
Technical Ply-Woods Sales, 6756 Crandon Ave., Chicago 49, Ill.
Techniflex Corp., Port Jervis, N. Y.
Techno Corp., 16 W. 5th St., Erie, Pa.
Tecumseh Products Co., Tecumseh, Mich.
Tedco Cooling Towers, Div. of Engineering & Development Co., Inc., 2406 S. 7th Blvd., St. Louis, Mo.
Tedd Company, The, P. O. Box 1621, Rockford, Ill.
Tejax Engineering Corp., P. O. Box 348, Pawtucket, R. I.
Teleflex Incorporated, P. O. Box 218, North Wales, Pa.
Telsco Fittings Div., 5422 Redfield St., Dallas, Tex.
Temco, Inc., 4101 Charlotte, Nashville, Tenn.
Temploc, Inc., 4249 N. Elton Ave., Baldwin Park, Calif.
Tempo Products Co., 6515 Carnegie Ave., Cleveland 3, O.
Temprite Products Corp., Dept. HPAC, E. Maple Rd., Birmingham, Mich.
Temtrol, Inc., Okarche, Okla.
Tennessee Coal & Iron Div., United States Steel Corp., P. O. Box 599, Fairfield, Ala.
Tennessee Plastics, Inc., P. O. Box 786, Johnson City, Tenn.
Tennessee Products and Chemical Corp., First American National Bank Bldg., Nashville, Tenn.
Tenney Engineering, Inc., 1090 Springfield Rd., Union N. J.
Termite Drills, Inc., 90 N. Lotus Ave., Pasadena 8, Calif.
Terre Haute Boiler Works Co., 1140 Crawford, Terre Haute, Ind.
Terry Steam Turbine Co., The, P. O. Box 1200, Hartford 1, Conn.
Tesco Inc., 1403 E. 5th Court, Tulsa, Okla.
Texas Co., The, 135 E. 42nd St. New York 17, N. Y.
Texas Instruments, Inc., 3609 Buffalo Speedway, Houston 6, Tex.
Texas Metal Fabricating Co., P. O. Box 7565, Houston 7, Tex.
Texas Vitrified Pipe Co., Mineral Wells, Tex.
Texstream Corp., P. O. Drawer 9127, Houston 11, Tex.
Therm Air Mfg. Co., Peekskill, N. Y.
Thermac Co., 14296 E. 6th St., Corona, Calif.
Thermador Electrical Mfg., 5119 S. District Blvd., Los Angeles 22.
Thermal Agency, 11 N. Jackson, Houston, Tex.
Thermal Engineering Corp., 2605 W. Dallas Ave., Houston 19, Tex.
Therm-O-Disc, Inc., Mansfield, O.
Thermo Electric Co., Inc., Saddle Brook, N. J.
Thermoid Co., 200 Whitehead Road, Trenton, N. J.
Thermo King Corp., 314 W. 90th St., Minneapolis 20, Minn.
Thermo-Products, Inc., North Judson, Ind.
ThermoRay Corp., 26 Ave. B, Newark, N. J.
Thermo-Sound Products, Div. of Kittell-Lacy, Inc., 10816 E. Fawcett Ave., El Monte, Calif.
Thermotank, Inc., Products Div., 11191 Lappin Ave., Detroit 34, Mich.
Therm-O-Wheel, Inc., 50th & Vernon Aves., Long Island City, N. Y.
Thern Machine Co., 3760 W. Fourth St., Winona, Minn.
Thomas Co., Arthur H., Vine Street at Third, Philadelphia 5, Pa.
Thomas Flexible Coupling Co., Main Ave. & Biddle St., Warren, Pa.
Thomas Industries, Inc., Electric Sprayit Div., 1415-25 Illinois Ave., Sheboygan, Wis.
Thompson and Co., 1085 Allegheny Ave., Oakmont, Pa.
Thompson & Son Co., The Henry G., 277 Chapel St., New Haven, Conn.
Thompson Research & Mfg. Co., Davenport, Fla.
Thomson Electric Welder Co., 161 Pleasant St., Lynn, Mass.
Thor Power Tool Co., 175 N. State St., Aurora, Ill.
Thor Tool & Die Co., 865 Estabrook, San Leandro, Calif.
Thread-Ezy Mfg. Co., Corunna, Mich.
Threadwell Tap & Die Co., Greenfield, Mass.
Three Point Industries, 1821 Howard St., Evanston, Ill.
Thrush & Co., H. A., Peru, Ind.
Thwing-Albert Instrument Co., Penn and Pulaski Ave., Philadelphia 44, Pa.
Tierney Rotor Ventilator Co., 239 Fourth Ave., S., Minneapolis, Minn.
Timken Roller Bearing Co., The, 1835 Dueber Ave., S. W., Canton 6, O.
Tinnerman Corp., George A., 19920 Ingersoll Dr., Cleveland 16, O.
Tipptronics, Inc., Chagrin Falls, O.
Titeflex, Inc., Hendee St., East Springfield, Mass.
Titus Mfg. Corp., Box 810, Hiway 20 West, Waterloo, Iowa
Titusville Iron Wks. Co., The, Titusville, Pa.
Tjernlund Mfg. Co., 2140 Kasota Ave., St. Paul 14, Minn.
Todd Shipyards Corp., Products Div., Columbia & Halleck Sts., Brooklyn 31, N. Y.
Toledo Pipe Threading Machine Co., 1445 Summit St., Toledo 4, O.
Torit Mfg. Co., 292 Walnut St., St. Paul 2, Minn.
Tork Time Controls, Inc., 33 Grove St., Mt. Vernon, N. Y.
Torrington Co., The, Bantam Bearings Div., South Bend 21, Ind.
Torrington Mfg. Co., The, Torrington, Conn.
TOT Towers, Inc., P.O. Box 2564, 5220 Lawndale, Houston 1, Texas
Toungate & Coats, P. O. Box 9156, Allandale Station, Austin 17, Tex.
Tracerlab, Inc., 1601 Trapoleo Rd., Waltham 54, Mass.
Trade-Wind Motorfans, Inc., 7755 Paramount Place, Pico Rivera, Calif.
Trageser Copper Works, Inc., New York International Airport, Jamaica 30, N. Y.
Trane Co., The, La Crosse, Wis.
Tranter Mfg. Inc., Lansing 4, Mich.
Trent, Inc., Leverington Ave. and Wilde St., Philadelphia 27, Pa.
Trent Tube Co., 430 Church St., East Troy, Wis.
Trerice Co., H. O., 1420 W. Lafayette Blvd., Detroit 16, Mich.
Triangle Conduit & Cable Co., Inc., Triangle & Jersey Aves., New Brunswick, N. J.
Triangle Engineering Co., 1309 Ashland, Houston 8, Tex.
Triangle Mfg. Co., 396 Division St., Oshkosh, Wis.
Trico Fuse Mfg. Co., 2948 N. 5th St., Milwaukee 12, Wis.
Trimont Mfg. Co., Div. of St. Pierre Chain Corp., 50 Frank St., Worcester, Mass.
Trimount Instrument Co., 3119 W. Lake St., Chicago 12, Ill.

Trindl Products, Ltd., 1807-11 S. Clark St., Chicago 16, Ill.
Trion, Inc., 1000 Island Ave., McKees Rocks, Pa.
Triplex Heating Specialty Co., Inc., 252 N. Grant, Peru, Ind.
Trombetta Solenoid Corp., 329 N. Milwaukee St., Milwaukee 2, Wis.
Tropical Paint Co., 1244-82 W. 70th St., Cleveland 2, O.
Tropical Tape Div., 899 Country Club Circle, Ft. Lauderdale, Fla.
Troy Engine & Machine Co., 26 Railroad Ave., Troy, Pa.
Truco Masonry Drilling Div., Wheel Trueing Tool Co., 3200 W. Davison, Detroit, Mich.
Truflo Fan Co., 523 Main St., Harmony, Pa.
Truscon Laboratories Div., Devoe & Raynolds Co., Inc., Caniff and Trunk R. R., Detroit 11, Mich.
Tru-Seal Div., Flick-Reedy Corp., 2040 N. Hawthorne Ave., Melrose Park, Ill.
Tryco Products, Inc., Parcel Post Station Box No. 72, Westfield, Mass.
Tube Forgings of America, Inc., 3121 S. W. Moody Ave., Portland, Ore.
Tube Manifold Corp., 415 Bryant St., North Tonawanda, N. Y.
Tube Turns Div. of Chemetron Corp., 224 E. Broadway, Louisville 1, Ky.
Tube Turns Plastics, Inc., 2929 Magazine St., Louisville 11, Ky.
Tubenfin Coil Co., 220 Broadway, Houston 12, Tex.
Tubing Seal-Cap, Inc., 808 W. Santa Anita, San Gabriel, Cailf.
Tuck-Aire Furnace Co., 2045 Evans Ave., San Francisco 24, Calif.
Tufflite Plastics, Inc., 19 Low St., Ballston Spa, N. Y.
Tulsa Canvas Products Co., Inc., P. O. Box 2072, Tulsa, Okla.
Turbo Research Corp., 1630 Euclid St., Santa Monica, Calif.
Turco Products, Inc., 6135 S. Central Ave., Los Angeles 1, Calif.
Turner Brass Wks., The, 821-47 Park Ave., Sycamore, Ill.
Tuthill Pump Co., 939 E. 95th St., Chicago 19, Ill.
Tuttle & Bailey, Div. of Allied Thermal Corp., 215 Warren St., New Britain, Conn.
Tuttle Electric Products, Inc., Kirkland, Ill.
Tweco Products Inc., P. O. Box 666, Wichita 1, Kan.
Twin Disc Clutch Co., 1310 Preston, Rockford, Ill.
Typhoon Air Conditioning Co., Div. of Hupp Corp., 505 Carroll St., Brooklyn 15, N. Y.
Typhoon Heat Pump Co., Div. of Hupp Corp., 2001 Garcia Ave., P. O. Box 1123, Tampa, Fla.

U

[Also see "United States"]

U. S. Electrical Motors Inc., 200 E. Slauson Ave., Los Angeles 54.
U. S. Expansion Bolt Co., P. O. Box 827, State St. & P.R.R., York, Pa.
U. S. Flexible Metallic Tubing Co., 454 East Third St., Los Angeles 13, Calif.
U. S. Plug & Fitting Co., Wellington, O.
Uehling Instrument Co., 473 Getty Ave., Paterson 3, N. J.
Ulrich Mfg. Co., Bump Pump Div., Roanoke, Ill.
Uni-Crest Div., United Cork Companies, 1 Central Ave., Kearney, N. J.
Unifilter Co., 43800 Grand River Ave., Novi, Mich.
Uniflow Mfg. Co., E. Lake Rd., Erie, Pa.
Uniflow Valve Corp., 19 Quine St., Cranford, N. J.
Unimax Switch Div., W. L. Maxson Corp., Ives Rd., Wallingford, Conn.
Union Carbide Chemicals Co., Div. of Union Carbide Corp., 30 E. 42nd St., New York 17, N. Y.
Union Carbide Plastics Co., Div. of Union Carbide Corp., 30 E. 42nd St., New York, N. Y.
Union Chill Mat Co., Grant Bldg., Pittsburgh, Pa.
Union Electric & Mfg. Co., 1057 Summit Ave., Jersey City, N. J.
Union Iron Wks., 1500 Cascade St., Erie, Pa.
Union Malleable Mfg. Co., Clark St., Ashland, O.
Union Metal Wks. Co., Inc., 128 Carter St., Chelsea 50, Mass.
Uaion Pipe Fitting Co., Fort Atkinson, Wis.
Union Steam Pump Co., Capitol Ave., S. W., Battle Creek, Mich.
Union Steel Chest Corp., LeRoy, N. Y.
Unistrut Products Co., 933 W. Washington Blvd., Chicago 7, Ill.
United Carr Fastener Corp., 31 Ames St., Cambridge, Mass.
United Centrifugal Pumps, 580 Second St., Oakland, Calif.
United Cork Companies, 1 Central Ave., Kearny, N. J.
United Electric Controls Co., 85 School St., Watertown, Mass.
United Instrument Co., 574 President St., Brooklyn 15, N. Y.
United Machinery Sales Co., 7709 S. Ashland Ave., Chicago 20, Ill.
United Metal Hose Co., Inc., 36-01 43rd Ave., Long Island City 1, N. Y.
United Mineral & Chemical Corp., 16 Hudson St., New York 13, N. Y.
United Sheet Metal Co., Inc., 540 S. Drexel Ave., Columbus 9, O.
United Specialties, Inc., P.O. Box 698, El Dorado, Ark.

[Also see "U. S."]

United States Air Conditioning Corp., P. O. Box 360, Delaware, O.
United States Electrical Tool Co., 3640 Llewellyn St., Cincinnati 23, O.
United States Gasket Co., 602 N. 10th St., Camden, N. J.
United States Gauge Div. of American Machine and Metals, Inc., Sellersville, Pa.
United States Gypsum Co., 300 W. Adams St., Chicago 6, Ill.
United States Mineral Wool Co., Stanhope, N. J.
United States Pipe & Foundry Co., Birmingham, Ala.
United States Register Co., Burnham St., Battle Creek, Mich.
United States Rubber Co., 1230 Ave. of the Americas, New York 20.
United States Steel Corp., 525 Wm. Penn Place Bldg., Pittsburgh 30.
United States Stoneware Co., 60 E. 42nd St., New York 17, N. Y.
United States Stoneware Co., Plastics & Synthetics Div., Akron 9, O.
United Wire & Supply Corp., 1497 Elmwood Ave., Cranston, R. I.
Universal Controls Corp., P. O. Box 13122, Dallas 20, Tex.
Universal Diffuser Corp., 38 Marbledale Rd., Tuckahoe, N. Y.
Universal Dynamics Corp., P. O. Box 9814, Arlington 9, Va.
Universal Electric Co., Owosso, Mich.
Universal Gear & Machine Co., 1301 E. McNichols Rd., Detroit 3, Mich.
Universal Instrument Co., 3807 Bunker Hill Rd., Brentwood, Md.
Universal Major Electric Appliances, Inc., P. O. Box 928, Baltimore, Md.
Universal Metal Hose Co., 2133 S. Kedzie Ave., Chicago, Ill.
Universal Sewer Pipe Co., 1500 Union Commerce Bldg., Cleveland, O.
Universal Valve Co., P. O. Box 444, Elizabeth, N. J.
Universal Welder Corp., 3537 Lee Rd., Cleveland 20, O.
Uno Ventilator Co., 1236 Eastern Ave., Malden 48, Mass.
Up-Right Scaffolds, 1013 Pardee, Berkeley, Calif.
Urethane Foam Div., Rainbow Industries, Inc., Butler, Pa.
Utah Hydro Corp., 751 W. 8th St., Salt Lake City 4, Utah
Utica Products, Inc., Utica 4, N. Y.
Utica Radiator Corp., 2201 Dwyer Ave., Utica 2, N. Y.
Utility Appliance Corp., 4851 S. Alameda St., Los Angeles 58, Calif.
Utility Fan Corp., Div. of Utility Appliance Corp., 911 E. 59th St., Los Angeles 1, Calif.

V

V. & E. Products, Inc., Schuylkill Haven, Pa.
V-Belt Clutch Co., 418 N. Western Ave., Los Angeles 4, Calif.
Vacu-Blast Co., Inc., P. O. Box 885, Belmont, Calif.
Vacuum-Electronic Engineering Co., 86 Denton Ave., New Hyde Park, L. I., N. Y.
Vacuum Gas Burner Co., Olean, N. Y.
Valco Corp., 1710 Roblyn Ave., St. Paul, Minn.
Valco, Inc., 1410 West St., Cincinnati 15, O.
Valcor Engineering Corp., Dept. 717, Carnegie Ave., Kenilworth, N. J.
Valdura Div., American-Marietta Co., 101 E. Ontario St., Chicago 11, Ill.
Valley Foundry & Machine Works, Inc., Fresno, Calif.
Valveblower Co. of Calif., 13729 E. Rosecrans Ave., Santa Fe Springs, Calif.
Valves, Inc., F. G., 6450 W. River Parkway, Milwaukee, Wis.
Vanderman Mfg. Co., Mansfield Ave., Willimantic, Conn.
Van Noorden Co., E., 100 Magazine St., Boston 19, Mass.
Van-Packer Co., Div. of the Flintkote Co., 1232 McKinley Ave., Chicago Heights, Ill.
Vanton Pump & Equipment Corp., 201 Sweetland Ave., Hillside, N. J.
Vapor Heating Corp., 80 E. Jackson Blvd., Chicago 4, Ill.
Vector Mfg. Co., Inc., Jenkintown, Pa.
Velocity Power Tool Co., Div. of Mine Safety Appliances Co., 201 N. Braddock Ave., Pittsburgh 8, Pa.
Velan Valve Corp., 37 South River St., Plattsburgh, N. Y.
Ventfabrics, Inc., 640 N. Kedzie Ave., Chicago 12, Ill.
Ventilouvre Co., Inc., Marietta, O.
Vernon Tool Co. Ltd., 1109 Meridian Ave., Alhambra, Calif.
Verson Allsteel Press Co., 9302 Kenwood Ave., Chicago 19, Ill.
Verson Mfg. Co., S. Lamar St. & Ledbetter Dr., Dallas, Tex.
Vibration Eliminator Co., 10-28 47th Ave., Long Island City 1, N. Y.
Vibration Mountings Inc., 98-25 50th Ave., Corona 68, N. Y.
Vic Mfg. Co., 1313 Hawthorne Ave., Minneapolis, Minn.
Victaulic Co. of America, P. O. Box 509, Elizabeth, N. J.
Victor Equipment Co., Welding Equipment Div., 844 Folsom St., San Francisco 7, Calif.
Victor Products Corp., 2633 Belmont Ave., Chicago 18, Ill.
Victory Engineering Corp., 118 Springfield Rd., Union, N. J.
Viking Air Products Div., National-U.S. Radiator Corp., 5601 Walworth Ave., Cleveland, O.
Viking Copper Tube Co., 16700 St. Clair Ave., Cleveland, O.
Viking Mfg. Corp., 1747 Chester Ave., Cleveland 14, O.
Viking Pump Co., Fourth and Rouse Sts., Cedar Falls 1, Ia.
Viking Research Corp., 618 Indiana Ave., Sheboygan, Wis.
Viking Shear Co., 1063 W. 19th St., Erie, Pa.
Vilter Mfg. Co., The, 2148 S. First St., Milwaukee 7, Wis.
Vimasco Corp., P. O. Box 465, Nitro, W. Va.
Vinco Products, Inc., P.O. Box 46, Glastonbury, Conn.
Virginia Smelting Co., West Norfolk, Va.
Vis-A-Plug, Inc., P. O. Box 100, King of Prussia, Pa.
Vogt Machine Co., Henry, 1000 W. Ormsby St., Louisville 10, Ky.
Vortox Company, 121 S. Alexander Ave., Claremont, Calif.
Voss Co., Inc., J. H. H., 785 E. 144th St., Corner of Wales Ave., New York 54, N. Y.
Vulcan Electric Co., 88-90 Holten St., Danvers, Mass.
Vulcan Radiator Co., 775 Capitol Ave., Hartford 6, Conn.

W

W. G. B. Oil Clarifier, Inc., Kingston, N. Y.
W-K-M, Div. of ACF Industries, Inc., P. O. Box 2117, Houston, Tex.
Waage Electric, Inc., 720 Colfax Ave., Kenilworth, N. J.
Wabash Corp., 2318 S. Western Ave., Chicago 8, Ill.
Wachs Co., E. H., The, 1525 N. Dayton St., Chicago 22, Ill.
Waco Steel Scaffolding, Inc., 630 N. Valley Mills Dr., Waco, Tex.
Wade Mfg. Co., Elgin, Ill.
Wagner Awning & Mfg. Co., 2658 Scranton Rd., Cleveland, O.
Wagner Bros., Inc., Equipment Div., 7800 Dix Rd., Detroit, Mich.
Wagner Electric Corp., 6370 Plymouth Ave., St. Louis 14, Mo.
Wakefield Co., The, Vermilion, O.
Waldron Corp., John, P. O. Box 791, New Brunswick, N. J.
Walker Jamar Co., 365 S. First Ave., E., Duluth, Minn.
Walker Mfg. & Sales Co., 1720 Penn St., St. Joseph, Mo.
Wall Tube and Metal Products Co., P. O. Box 330, Newport, Tenn.
Wallace Co., William, Metalbestos Div., Belmont, Calif.
Wallace Products Co., B. E., Exton 20, Pa.
Wallace Supplies Mfg. Co., 1304-12 Diversey Pkwy., Chicago 14, Ill.

Wallace & Tiernan Incorporated, 25 Main St., Belleville 9, N. J.
Walsh Co., The L. M., 755 Boylston St., Boston 16, Mass.
Walton Co., Box 5, Elmwood Branch, Hartford 10, Conn.
Walton Laboratories, Inc., 1186 Grove St., Irvington 11, N. J.
Walworth Co., 750 Third Ave., New York 17, N. Y.
Ward Foundries, Inc., J. P., Blossburgh, Pa.
Ward Leonard Electric Co., 24 South St., Mt. Vernon, N. Y.
Ware Coupling & Nipple Co., Ware, Mass.
Warner Electric Brake & Clutch Co., Beloit, Wis.
Warner Lewis Co., Div. of Fram Corp., 817 N. Lewis Pl., Tulsa, Okla.
Warner Ventilator Co., 225 Spring St., La Grange, Ind.
Warren Engineering Co., Broadway, N. J.
Warren Pumps, Inc., Warren, Mass.
Warren Refining & Chemical Co., The, 5151 Denison Ave., Cleveland 2, O.
Washington Steel Corp., Griffith Ave., Washington, Pa.
Wassco Electric Products Corp., 2032 2nd Ave., So., St. Petersburg 12, Fla.
Water Cooling Corp., 71 Nassau St., New York 38, N. Y.
Water Cooling Equipment Co., 8601 New Hampshire, St. Louis 23, Mo.
Water Service Laboratories, Inc., 615 W. 131 St., New York 27.
Water Treatment Company of America, 1159 Hodgkiss St., Pittsburgh 12, Pa.
Waterloo Register Co., Inc., P. O. Box 72, Waterloo, Ia.
Waterman-Waterbury Co., The, 1121 Jackson St., N. E., Minneapolis 13, Minn.
Watervilet Tool Co., Inc., 1349 Broadway, Albany, N. Y.
Watkins Co., J. E., 307 Lake Street, Maywood, Ill.
Wa-Trol, 3232 Louisiana St., P. O. Box 6366, Houston, Tex.
Watson & McDaniel Co., 440 N. Marshall, Philadelphia 23, Pa.
Watson-Standard Co., 225 Galveston Ave., Pittsburgh 30, Pa.
Watts Regulator Co., 10 Embankment St., Lawrence, Mass.
Waukesha Foundry Co., Waukesha, Wis.
Waukesha Motor Co., Waukesha, Wis.
Waverly Heating Supply Co., 117 Elliott St., Beverly, Mass.
Way-Wolff Associates, Inc., 45-10 Vernon Blvd., Long Island City 1, N. Y.
Wayne Coil & Tower Corp., Rt. 23, Pompton Plains, N. J.
Wayne Home Equipment Co., Inc., 801 Glasgow Ave., Ft. Wayne, Ind.
Wayne Pump Co., The, Div. of Symington Wayne Corp., Ft. Wayne 4, Ind.
Weatherall Engineers, Inc., 478 Smithfield Ave., Providence, R. I.
Weatherhead Co., The, Ft. Wayne Div., 128 W. Washington Blvd., Ft. Wayne, Ind.
Weather King of Florida, Inc., 2310 Coolidge Ave., Orlando, Florida
Webb Corp., The, Webb City, Mo.
Webster & Co., Warren, 1664 Federal St., Camden 5, N. J.
Webster Electric Co., Clark & DeKoven Aves., Racine, Wis.
Webster Engineering Co., P. O. Box 5373, Tulsa 16, Okla.
Wedgeplug Valve Co., Div. of Stockham Valves & Fittings, Box 2592, Birmingham 2, Ala.
Wedge Protectors, Inc., 3985 Jennings Rd., Cleveland 9, O.
Weighing & Control Components, Inc., 206 Lincoln Ave., Hatboro, Pa.
Weil-McLain Co., Michigan City, Ind.
Weil Pump Co., 1523 N. Fremont St., Chicago 22, Ill.
Weinman Pump Mfg. Co., The, 290 W. Spruce St., Columbus 8, O.
Weirton Steel Co., Weirton, W. Va.
Weiss & Son, Inc., Albert A., 261 Vanderbilt Ave., Brooklyn 5, N. Y.
Weksler Instruments Corp., 195 E. Merrick Rd., Freeport, Long Island, N. Y.
Weldex, Inc., 18425 Weaver, Detroit, Mich.
Welding Apparatus Co., 2750 W. Van Buren St., Chicago 12, Ill.
Weldit, Inc., 990 Oakman Blvd., Detroit 38, Mich.
Welsbach Corp., The, Kitson Valve Div., 1500 Walnut St., Philadelphia 2, Pa.
Wendt Co., O. A., 1655 W. Fullerton Ave., Chicago 14, Ill.
Wer-Coy Fabrication Co., 2232 Beniteau St., Detroit 14, Mich.
Wesche Electric Co., B. A., 9027 Shell Rd., Cincinnati 42, O.
Wescott Snyder Mfg. Corp., Madison, N. J.
Wesix Electric Heater Co., 390-1st St., San Francisco 5, Calif.
West Instrument Corp., 4363 W. Montrose Ave., Chicago 41, Ill.
Western Blower Co., 1800 Airport Way, Seattle 4, Wash.
Western Boiler Co., 1600 N. Indiana St., Los Angeles 63, Calif.
Western Engineering & Mfg. Co., 4114 Glencoe Ave., Venice, Calif.
Western Felt Works, 4029-4117 Ogden Ave., Chicago 23, Ill.
Western Plastics Corp., 3110 Ruston Way, Tacoma, Wash.
Western Piping & Engineering Co., Inc., 123 Kansas St., San Francisco 3.
Western Precipitation Corp., 1000 W. 9th St., Los Angeles 54, Calif.
Western Wire & Iron Works, Inc., 957 W. 18th Pl., Chicago 8, Ill.
Western Wire Products Co., 1415-35 S. 18th St., St. Louis 4, Mo.
Westinghouse Air Brake Co., Industrial Products Div., Box 36, Wilmerding, Pa.
Westinghouse Electric Corp., 4454 Genesee St., Buffalo 5, N. Y.
Westinghouse Electric Corp., P. O. Box 868, Pittsburgh 30, Pa.
Westinghouse Electric Corp., Air Conditioning Div., Staunton, Va.
Westinghouse Electric Corp., Electric Appliance Div., East Springfield, Mass.
Westinghouse Electric Corp., Electric Heater Div., 5815 Peladeau St., Emeryville 8, Calif.
Westinghouse Electric Corp., Lamp Div., Bloomfield, N. J.
Westinghouse Electric Corp., Sturtevant Div., 136 Readville St., Hyde Park, Boston 36, Mass.
Westline Products Div., Western Lithograph Co., 600 E. 2nd St., Los Angeles 54, Calif.
Weston Instruments, Div. of Daystrom, Inc., 614 Frelinghuysen Ave., Newark 12, N. J.
Westronics, Inc., 3605 McCart St., Fort Worth, Tex.
Wheatland Tube Co., Bankers Securities Bldg., Juniper & Walnut Sts., Philadelphia 7, Pa.
Wheelabrator Corp., 1401 S. Byrkit St., Mishawaka, Ind.
Wheeler Mfg. Co., C. H., 19th & Lehigh, Philadelphia 32, Pa.
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White Flomatic Corp., P. O. Box 267, Hoosick Falls, N. Y.
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Whitehall Engineering Co., Inc., 1630 S. Michigan, Chicago, Ill.
Whitewater Pump Co., Inc., Whitewater, Wis.
Whiting Corp., Harvey, Ill.
Whiting Fire Power Products Corp., 1101 John Ave., Superior, Wis.
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Wilson Div., H. A., Engelhard Industries, 2655 Route 22, Union, N. J.
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Wysong & Miles Co., 625 Fulton St., Greensboro, N. C.

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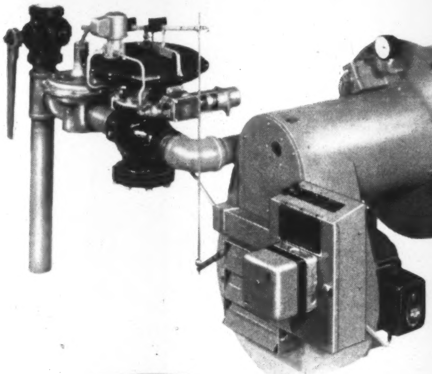

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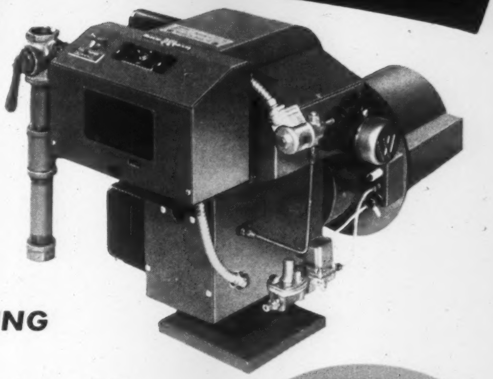

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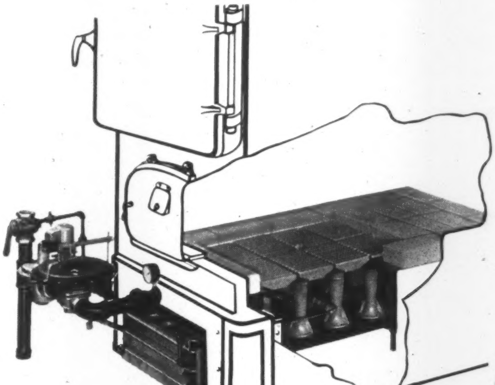

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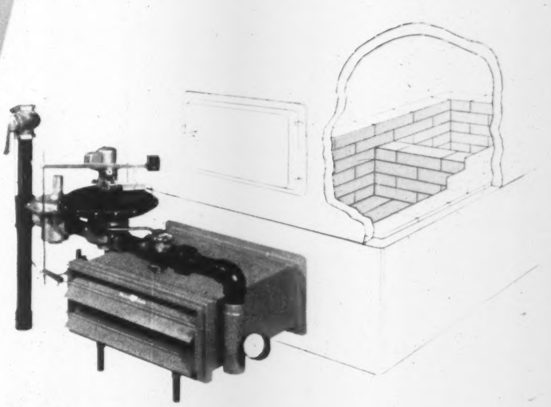

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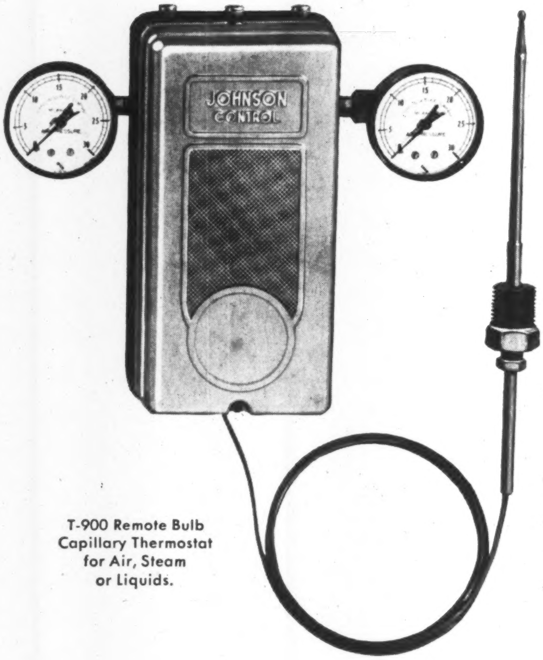
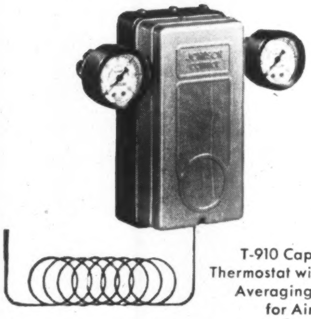
- Choice of elements:
  1. Liquid filled capillary with remote bulb. Standard temperature range from −30F to 300F; to 600F on special order. Fully compensated stainless steel capillaries available from 8 to 85 feet. Non-compensated copper capillaries furnished in 4 and 6-ft. lengths.
  2. Rigid stem liquid filled insertion element. Temperature range −30F to 300F.
  3. Rigid stem liquid filled immersion element. Temperature range −30F to 300F.
- All elements are fully interchangeable.
- Pneumatic follow-up movement (feedback) assures stable, highly accurate response at lowest required sensitivities. Sensitivity is adjustable.
- Unaffected by ambient temperature or static head. Remote bulb may be located at any point above or below thermostat.
- Proportional action.
- Direct or reverse acting. Simple change of pivots converts from direct to reverse acting.
- Widely used both as a standard thermostat and as a master controller for readjusting the control setting of a submaster thermostat.

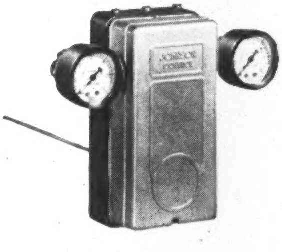
For full details, write for Bulletin T-900. Johnson Service Company, Milwaukee 1, Wisconsin.



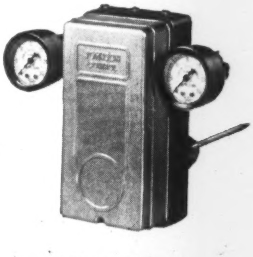
T-900 Remote Bulb Capillary Thermostat for Air, Steam or Liquids.



T-910 Capillary Thermostat with 8-foot Averaging Bulb for Air.



T-902 Rigid Stem Insertion Thermostat for Air.



T-904 Rigid Stem Immersion Thermostat for Liquids.

JOHNSON CONTROL

PNEUMATIC SYSTEMS

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